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EDUCATION FOR THE NEEDS OF LIFE

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EDUCATION FOR THE NEEDS OF LIFE

A TEXTBOOK IN THE
PRINCIPLES OF EDUCATION

FOR USE IN ELEMENTARY CLASSES IN NORMAL SCHOOLS
AND COLLEGES AND IN INSTITUTES AND READING CIRCLES

BY

IRVING ELGAR MILLER, PH.D.

AUTHOR OF THE PSYCHOLOGY OF THINKING

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PREFACE

THE preparation of this book is the direct outgrowth of the generous appreciation given to the writer's "Psychology of Thinking." The dominant point of view of that book is here applied more widely to the interpretation of education. Although treating of principles and fundamental ideas rather than of details, nevertheless the attempt has been made to express the thought simply enough to make the book useful as a text in elementary courses in Normal Schools and Colleges and as the basis of discussion for groups of students who are working together in reading circles and teachers' institutes.

Education is conceived as an integral phase of the life process. Everything that lives has needs to be met. In so far as any living being actually modifies its own behavior in the light of experience, learning occurs. Conscious, or intentional, education gives guidance and direction to the natural learning processes. It does not substitute something else for the principles, laws, and methods of nature; it works in harmony with them and facilitates nature in the attainment of her goal in the lives of individuals. The outcome is that the needs of life are met better, more fully, and at higher levels. Education, to be efficient, has to know what the needs of life are, under what

conditions children normally undertake to meet them, by what processes they are met, what subject matter is suited to meet needs, and what sort of people are best fitted to assist children in meeting their needs. After giving the scientific background upon which this functional conception of education rests, the writer applies the idea to the interpretation of the nature and function within the educative process of the aim, the pupil, the curriculum, the method, and the teacher.

In the matter of organization the book contains one new feature, a series of questions at the head of each chapter. They are not put there with the idea that they are to be asked by the teacher of the class. Their function is to focus the mind of the reader upon the outstanding problems of the chapter in advance of its study. It is hoped that readers and students of this text will take the time to give their minds the "set" which Professor Thorndike emphasizes as a condition favorable to learning, or the grasp of thought.

The preparation of this text would have been impossible without the sympathetic interest of Professor Paul Monroe. I am indebted also for criticism to my wife, Lily R. Miller; to Mr. Sterling A. Leonard, Professor of English in the Lincoln School of Teachers College; and to Mr. Herman C. Henderson, Professor of Psychology and Education in the State Normal School, Milwaukee, Wisconsin.

IRVING E. MILLER.

New York City,
June 1, 1917.

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EDUCATION FOR THE NEEDS OF LIFE

CHAPTER I

THE BIOLOGICAL POINT OF VIEW IN EDUCATION

Why is it appropriate to conceive of education in biological terms? What are the outstanding characteristics of an organism that are most suggestive for educational thought? Will these characteristics apply to the social group as well as to the individual? What is the meaning of adjustment? What are the significant factors in human adjustment? What conditions make education a necessity in its attainment? What are the implications of the biological point of view as to the relations between body and mind in education? as to the relations between intellect, feeling, and will? How does the idea of function grow out of the biological conception? What are its various meanings and applications? Does the mathematical conception of function also have meaning for education? [1]

Education for the Needs of Life

When the backbone of winter is broken, the lover of growing things begins to get the gardening fever. One of the first things to be planned is the row of sweet

[1] See the statement in the preface for the significance and use of these questions.

peas. He wants to make sure of a profusion of large, showy blossoms. To attain this end he has to know the nature of sweet peas and to do all that he can to meet their needs. As early as possible in the spring, he digs a wide, deep trench in the ground. Into this he throws an abundance of fertilizer and stirs it in thoroughly. He sows the seed and covers it deeply. Why does he take this mode of procedure rather than some other? He knows that sweet peas require a rich soil and the chance for the development of an extensive system of rootage. The seeds are planted early because it takes a long time for them to sprout and to get well rooted. If they are planted while the ground is still cool, the root system is likely to get well started before the stalks thrust themselves up through the soil; hence they will grow vigorously when they do come up. Sweet peas need an abundance of moisture; hence the gardener plants them deep in the ground so that they will not be so likely to dry out during the heat of summer. For the same reason, he watches the vines carefully through the hot weather and waters them frequently. He knows that vigorous plants such as are necessary to the growth of large blossoms must have adequate room for their roots and the vines must receive an abundance of sunshine; so he thins out the young plants until they stand not less than an inch apart. Sweet peas need some sort of

support to which their tendrils can cling and carry the vines up into the sunshine; so the gardener provides an upright wire screen upon which the vines may run. Now the gardener cannot create according to his will either the seeds, the vines, or the blossoms. He can only provide the conditions most suitable for their growth and give the care that will meet the needs of the growing vines as fully as possible at every stage of their life. The stockman, in like manner, is successful with animals in so far as he knows their nature and is able to assist them most effectively in meeting their needs.

The human being is not an exception to other living things in the fundamental laws of life. From the biological point of view, we must think of him as a living whole, or organism. They who would see the child reach his highest perfection must know his nature and supply the conditions under which his needs can best be met. Education is not something apart from life; its nature and function can best be seen in the light of the living whole to the perfection of which it contributes. The fuller meaning and significance of this point of view will be brought out in the study of the outstanding characteristics of an organism and the process of adjustment of human beings to their environment.

The Outstanding Characteristics of an Organism

The organism has many characteristics which mark it off from a mere thing. For our purposes, it will be sufficient to emphasize four of these.

An organism has needs.

A stone, a piece of iron, a pan of water cannot be said to have any needs. They are just what they are. No problem confronts them of maintaining their status. Except from an outside point of view it doesn't matter at all whether they remain as they are, whether they are broken into bits, or whether they are entirely disintegrated. But it is of the essence of an organism to live, and this means that it must be continually satisfying needs. The lower forms of plant life need light, air, water, and nutrition. As we ascend the scale of life, particularly in the animal series, needs multiply. In man they are exceedingly varied and complex. To live a human life involves the satisfaction of all sorts of physical, mental, and social needs.

An organism is capable of behavior.

By behavior we mean any kind of activity in response to stimuli from without or to tendencies from within. A stone, a piece of iron, a pan of water cannot be said to respond to stimuli. They do not act, they move

wher acted upon. What they do is the result of mechanical and physical forces. But a plant tends to bend toward the light, a frog to jump into the water, a man to respond in thousands of specific ways to the situations of life by which he is confronted. In speaking of human beings, we include under the head of behavior not only motor processes but also those that are mental. I see an apple under the tree; I respond by focusing my eyes upon it, walking toward it, picking it up, and eating it. In this case behavior is dominantly motor, but not without some mental activities. My behavior might be simply an emotional response in the form of pleasure at the beautiful color and form of the fruit; or it might be an intellectual response in the form of curiosity as to the species of apple and its characteristic qualities. In the case of human beings we might appropriately speak of tendencies to social and spiritual behavior also, — tendencies to act in coöperation with others and with reference to the needs of the higher life.

The organism is capable of adaptive behavior.

By adaptive behavior we mean such action as meets the needs of the organism. The stone, the piece of iron, the pan of water have neither needs nor modes of action suited to meet them. But the house-plant, when it bends toward the window, meets its need of

light by an adaptive mode of behavior. The frog in need of food can meet that need by snapping at flies. The man who is in need of shelter can meet this need by building a wigwam, a tent, or a house. Man is capable of more numerous and more complex modes of adaptive behavior than any other living thing. These correspond to his more numerous and complex physical, mental, and social needs.

In the adaptive behavior of an organism all parts, organs, and specialized structures are interdependent and interrelated.

In the plant, root, stem, and leaf each has its function to perform in the life of the whole. No one of them exists for its own sake; no one of them can live independently of the others. In the human body, we find specialized structures such as the heart, the lungs, the muscles, and the nervous system. Each has its own function to perform, but it is also dependent for its life upon the activity of the other organs. The meaning and significance of each is found in the part played in the life of the whole. Mind and mental processes are subject to the same principle of interpretation. Mental functions, like sense perception, memory, thinking, feeling, and willing, are not ends in themselves but means whereby the needs of the entire organism are better met.[1]

[1] Miller, "Psychology of Thinking," pp. 17–21.

The Social Group as an Organic Whole

Society is sometimes spoken of as an organism. In the strict biological sense this is incorrect. At the same time, the analogy is so striking that it has great value. In the four respects that we have just discussed, the parallelism is complete. It is correspondingly appropriate to speak of any social group as an organic whole. This is true both of natural social groups such as the family and the tribe and also of artificial social groups such as the business or industrial corporation. The organization of people for coöperative ends means both the existence of needs that can be attained better through organization and also the emergence of new needs due to that organization. Among these are the needs of leadership, obedience, larger human sympathy, coöperative ideals. The family, the tribe, the church, the school, the bank, the manufacturing corporation, all develop new modes of behavior; and in so far as these coöperative modes of behavior accomplish the legitimate ends of the social whole, meeting its needs, they may be called adaptive. It can also be said of any one of these social groups that the individuals composing it are mutually interrelated and interdependent. In any social organization, the individual ceases to be merely an end in himself, he becomes also the means to the realization of the ends of

others. The same thing may be said about the specialized organizations within the group. In the large business concern, there are special departments of advertising, of salesmanship, of accounting, etc. These have their meaning and significance only in their relationship to the primary purposes of the entire organization within which they perform certain functions.

Education as Adjustment

Meaning of adjustment.

The mental and social sciences are using the term "adjustment to environment" so freely that it may become familiar to us without our really thinking or knowing what it means. We are apt to pick it up from current usage and adopt it as a part of our scientific jargon without realizing that it is merely a conventional catch phrase without meaning to us. Such terms as this, familiar in sound, but not expressing any real thought or conveying thought to others, become very dangerous in the discussion of education, politics, and religion. Hence it will pay us to spend some time in clearing up the whole idea of adjustment.

From the very outset we must be very careful to understand that adjustment as we use the term in education implies not a mechanical process, but a dynamic one. We derive the term not from physics but from

biology. In the case of physical things, it is true that adjustment, or right working relations of things with one another, may be established by mechanical processes. You can adjust a belt to a wheel in the operation of a machine by tightening the belt until it is carried with the minimum of friction and the maximum of power. You can adjust a piano stool to the height of the player by screwing it up or down until it suits. But neither the belt nor the stool can have any active part in the matter. They are operated on from without. In the case of a living thing, however, the organism is itself an active, or dynamic, center of readjustment. It is a behaving thing as contrasted with the belt or the stool, and through its behavior it meets needs of its own.

If the function of education is to be found in any part which it plays in the process of adjustment, we have a right to say at this point that education is not a mechanical process but a dynamic one. It cannot be conceived as doing something *to* the pupil, or imparting something to him, whether of skill or of knowledge, from without. It is not a process of imposing something on him by the teacher or the school. His adjustment to the environment is something which he must effect for himself through his own activities. This he will accomplish to a certain extent without any aid from others. His knowledge, skill, and character

must come through the active process of meeting his own needs in the various situations that confront him. There is no escape from this conclusion. All that education can do in the matter, from the scientific point of view, is to facilitate the process of adjustment in two ways: first, by providing a rich environment as a basis of stimulation and of materials; and second, by giving a limited amount of guidance and direction to the activities involved.

Factors involved in adjustment.

The biological point of view can be cleared up still further by some discussion of the factors involved in human adjustment. Roughly speaking these are three: the environment, the individual, and the existing action system by means of which the individual reacts upon his environment. We need to know the meaning of these, if we are to define the educational problem more precisely and to formulate the function of education in more specific terms.

The environment. — In the popular sense of the word, the environment of anything is that which surrounds it. For our purposes this conception is inadequate. The surroundings of the dog and his master may be identical but their environments radically different. This may be true even of children of the same family. The newspaper, the paintings on the wall, the books

on the shelves, the striking of the clock do not enter into the environment of the dog in the same sense as they do into that of his master. To the dog they are limited largely to the physical; to the man they are things that have a large meaning and significance. It is this larger meaning and significance — largely nonexistent for the dog — to which the man responds, or which influences his conduct. When we use the term "environment" in education we mean everything to which human beings respond or which is capable of influencing them. From this point of view the environment includes not only physical things and material forces but also things mental, moral, social, esthetic, and religious. The true, the beautiful, and the good are just as real in their influence on men as earth, air, fire, and water.

With the progress of civilization the environment of man has been tremendously enriched and expanded with the achievements of the mind and the spirit. The great personalities of all the ages still live in the vital ideas which they projected. The lives and teachings of Socrates, Moses, and Jesus are a very potent part of our environment. They even influence men who have never heard of them. So with the great painters, sculptors, musicians, writers, scientists, inventors, captains of industry, social reformers, statesmen, etc. By these and by millions of humbler folk the

face of the world has been transformed until it almost ceases to be physical, so charged is it with human achievements, hopes, ambitions, desires, aspirations, ideals, and interpretations. He is certainly not an educated man who has not achieved a large responsiveness to this enriched environment embodying the higher human values that distinguish civilization from savagery. From the point of view of adjustment to the environment, education must assist in meeting the needs of men who are "the heirs of all the ages in the foremost files of time." Man is to live and work in a world that has been reconstructed and enriched with the heritage of all the past.

Still further, the environment of which we must think when we are considering the problem of education is not a static one. Change is very rapid in the modern world. Adjustment is not merely to things-as-they-are. We must have regard to things-as-they-will-become and to things-as-they-ought-to-be. It is a progressive environment which confronts the product of our schools. Hence education must take account of those factors in the process of adjustment that make it possible for men to change their environment to meet new and changing needs. It must emphasize intelligence, initiative, originality, enterprise. It is not so much a fixed adjustment that we want as it is adjustability. This thought leads us naturally to the con-

sideration of the next factor in adjustment, namely, the individual who is to be educated.

The individual. — The human being is a dynamic individual, not merely the creature of circumstances. By heredity he brings with him a physical organism that represents a great complex, or tangle, of needs. He is a living bundle of impulses that seek expression, that press insistently for satisfaction. He is not merely waiting to be acted upon, molded, or fashioned; by his inherent nature he tends to act. As a baby he cries, kicks, squirms, thrusts with his arms, and manipulates with his fingers. Throughout his childhood he is "spilling over" with activities — with play, constructive impulses, tendencies to explore with eyes, hands, and mouth, tendencies to investigate, imagine, think, etc. These natural tendencies are, on the one hand, expressive of primary needs and, on the other hand, they determine the trunk lines of the earlier forms of behavior. They condition the process of adjustment to the environment, and hence they must be the starting point in the educative process.

The action system, or mechanism of behavior. — The third factor in adjustment is the mechanism of behavior by means of which the individual expresses his natural tendencies and reacts upon his environment to satisfy his needs. Now the striking thing

about this in the case of man is that he starts with an action system that is very imperfect, very poorly adapted to meet his numerous and complex needs. As compared with that of the chicken, the puppy, or the calf, the behavior of the human young is very chaotic and unorganized. His effective adjustments to the world in which he lives are largely yet to be made. He is helpless, dependent, and subject to parental care for a long series of years. During a long period of plasticity he has to work out the methods and processes of successful behavior for himself.

Conditions That Make Education Necessary

In the facts that we now have before us of an enriched and progressive environment, the dynamic human being, and the imperfect action system of the child, we see the conditions that make education necessary. The imperfect action system of the child must be developed, and the physical and mental processes essential to well-ordered and effective behavior must be brought under control. In the course of a few years the child born helpless, ignorant, and dependent must be adjusted to a rich, complex, and changing environment. He must have acquired the fundamental methods and processes of business, government, art, religion, and some specific vocation. The rising generation must take over into their lives all

the fundamental values of civilization that have been acquired in thousands of years of progress. Furthermore, control over the process of adjustment itself must be achieved. There must be such a development of insight, intelligence, originality, and initiative that further modifications both of the self and of the physical and social environment can be made in the interest of further progress. While all three of these demands might conceivably be met in some measure through the friction of experience, at least after the earliest years of physical dependence are past, yet the processes of human life are so complex that the chances of full, free, and flexible adjustment to the environment are certainly very small on this basis. The interests both of the individual and of society demand the conscious and intelligent guidance and direction of the young in the matter of getting into right working relations with the facts and forces of the world in which they live. Education is a fundamental social necessity of the modern world, a social function that cannot safely be ignored.

The Ideal of the Whole Self in Education

One of the most important contributions which the biological point of view makes to education is to be found in the emphasis which it puts on the dynamic relation of all parts of the organism to one another

within the living whole. It puts great stress on the unity and continuity of mental and bodily activities, and in the sphere of the mind it makes evident the interdependence and functional relationship to one another of intellectual, emotional, and volitional processes. In its bearing on education this might be expressed by saying that it emphasizes the *ideal of the whole self* in education. The child who comes to school in the morning does not bring his mind into the classroom and check his body in the hall; neither, when he goes to the playground, the gymnasium, or the manual training room, does he put his mind away with his books in his desk. Both body and mind interact in all that he does. Each has its function to perform in the entire whole of his activity.

Organic relation of body and mind.

In physical education it is coming to be recognized that those forms of physical exercise which are enjoyed are superior to those which are accompanied by a disagreeable feeling tone. Pleasure means heightened vitality; the unpleasant and disagreeable actually lower the vital tone of the organism. The physical value of walking around the city block forty times does not equal that of the same amount of walking in pleasant companionship or in search of wild flowers, fish, or game. The exhilarating effects of bicycle

riding do not come wholly from the amount of exertion, but also from the excitement of gliding along so rapidly. This gives an added sense of freedom and power which is satisfying and recreative. The physical value of formal gymnastics, except for certain corrective purposes, is not comparable to that of tennis, rowing, or other forms of sport. One thing that makes play the most vital form of physical exercise is the fact that the child throws his whole self into it. There is zest, thrill, glow of soul due to the activity of the imagination, the alertness of attention, and the varied and everchanging physical activity. The tonic effect of the play of the mental processes and of the emotional satisfaction is not separable from the effect of the physical exercise itself. In rightly organized physical education, they will all be taken into account.

Looked at in reverse, we can say also that bodily conditions affect mental action. Health, vigor, and vitality are conducive to good mental work. Fatigue, bad air, malnutrition, extremes of temperature interfere with the working of the mind. It has been demonstrated that adenoids, diseased tonsils, and colds all tend to lower the vitality and to retard the progress of pupils. Even will is not a purely mental fact; vitality, energy, and nerve force are integral factors in strength of will. Anything that contributes to normal health and bodily vigor is not foreign to the mental

and moral aims of education. While we have numerous cases of strong minds in weak bodies, we nevertheless expect the maximum of mental vigor in any individual to be coincident with the maximum of bodily energy at his disposal. Into a mental task it is the whole self that is put and not merely the mind. This idea might be carried out still farther to show that the whole self which functions in mental tasks includes moral and social factors. The sense of responsibility and of moral obligation is an added incentive to effort. Ideals, through their grip on the feelings, intensify motivation. The social sense of loyalty to the group and the desire of social approval may give steadiness and heightened vitality to the mental reactions. Even poets, inventors, scientists, statesmen, and philanthropists are moved by the thought of fame. The social situation often gives zest and point to the mental efforts of school children. The mind is often keener and more subtle in a social situation than it is in one's library.

The part that physical activity plays in the mental life may be seen from still another angle. According to current psychology, consciousness is not a luxury. It does not put in its appearance unless needed. It is needed when organized modes of motor reaction, such as reflexes, instinctive acts, and habits, break down, are blocked, or in some other way fail to meet

the needs of the individual. The life of the child is just full of such problematic situations in the meeting of which consciousness has a value. He has more tendencies to action, more numerous needs to meet, than any of the other animals; but these tendencies are not organized in advance for effective motor expression. The child is confronted repeatedly with situations in which he has to organize, direct, and control new modes of procedure. In such attempts his conscious processes are called forth and they grow in definiteness, relevancy, and in specialized function in the light of his experience. It has been pointed out by the biologists that the superior flexibility of the body of man, and in particular of his hands, has tremendously widened the range of his activities and increased the delicacy of his manipulations. This is not without its mental consequences. Man comes into more intimate and varied relationship with his environment, and his conscious processes are stimulated, drawn into use, and perfected. On account of this relation of motility to the development and specialization of conscious processes, it has been wittily said that in the evolution of the race "the mind of man is literally hand made." It is certain that the motor activities are exceedingly important in the mental training of children. Widen the range of their physical activities and see that they are confronted with situa-

tions calling for the organization, direction, and control of such activities, and you have furnished the conditions for mental activity and mental development. It is not a matter of educational caprice but of psychological conviction that makes us insist on the educational value as strongly as on the vocational worth of the various manual arts. It is this same conviction that lies back of the emphasis that is now being placed on the project method wherever it can be applied.

We might conclude this discussion of the educational interrelationships of body and mind by pointing out the fact that the body is the instrument through which the mind expresses itself. But it is not a ready made instrument like the piano which one can buy and then learn to play upon it. The relationships between the mind and its instrument have to be set up by the individual himself. The bonds of connection have to be established in experience. From this point of view habit formation is essential to effective mental action. Habits are not necessarily just specialized modes of physical reaction. They ought to be developed under such conditions that they are so thoroughly coördinated with ideas that they become modes of mental expression. This ought to be true of such organized and highly specialized activities as those of penmanship, typewriting, piano playing, mod-

ulation of the voice, observance of social conventions, etc. In so far as ideas can play down on these habits and touch them off, in so far as they are at the beck and call of ideas, they become methods of mental expression in the free and flexible control of situations. The mastery of the motor technique of piano playing may yield marvelous powers of manual gymnastic with a minimum of music. On the other hand, where the habits involved have always been kept in close correlation with the spirit of the music that was to be expressed, the skilled technique of the pianist is a most marvelous expression of what he feels in his soul. There is no legitimate isolation of motor habit from the mind which is to operate it. Any habit that gets complete isolation from some center of ideational control ought to be looked upon with suspicion, and methods of instruction that produce such isolation by perfecting the habit apart from the situations in which it has meaning and significance is psychologically condemned at the outset. Habits not under the control of the mind mean a disrupted self instead of a unified one. We have tended too much to set habit and thought over against each other as antithetical. Habit is something like a machine which thought can set going and thus relieve itself of much of its mental drudgery. But it has no value in and of itself, it has to be directed and utilized by the mind. Even good

thinking depends upon the organization and utilization of many previous mental processes that have become habitual. In all of those school activities which are designed to establish useful motor habits, we want the group of minor acts that are coördinated into the new habit to be so thoroughly welded together into one complex that they require no thought for their execution. But at the same time we want the habit formed under conditions such that when it is established it operates as an instrument of the whole self in the accomplishment of its purposes. This will usually mean that it should be under the control from the outset of some idea, set of ideas, or ideal, and not become a mere automatism.

Organic relation of intellect, feeling, and will.

The older psychology regarded intellect, feeling, and will as three more or less distinct faculties. From the biological point of view, they must be regarded rather as interdependent and interrelated functions. Each has its work to do in a problematic situation calling for mental action, but no one of these functions is independent and distinct from the others. This can best be seen through the discussion of an illustration.

As I am walking along the street, suppose my attention is attracted by a burning building. Intellectual activities are aroused through which I perceive smoke,

flames, people at the windows calling for help. The meaning of all this in terms of my past experience is given to me as fire and people in danger of their lives. Imagination pictures vividly what will happen if no help comes. I wonder if the fire company has been called and whether they will arrive in time. Now all this intellectual activity conceivably might go on simply as a matter of curiosity. Nothing would be done by me to remedy the situation any more than it would be if I were looking at a moving picture. But normally the mind does not work that way. The intellectual activities do not go on in a water-tight compartment of the mind. They are organically related to the feelings and the will just as truly as the beating of the heart is related to the vital processes of every organ of the body. Normally I cannot see the burning building, understand what it means, and picture in my mind the fate of the people cut off from escape without at the same time experiencing a tremendous wave of feeling. This feeling is not simply a by-product of my intellectual activities, but it has a value and function in the determination of adaptive behavior. My sympathy for the victims identifies me with them in a common cause. I have become a part of their situation; their situation has become a matter of concern to me. I have been brought into this situation in such a way that I cannot escape its consequences.

If they perish, I am unhappy; if they are saved their joy is my joy, too. Intellectual activities have performed the function of bringing the situation before me and making clear what it means; feeling has done the work of identifying the situation with me so that it is a matter of concern to *me*. Intellect gives the objective aspect of the situation, feeling the subjective. But these two functions of consciousness do not complete the process by which the needs of this vital situation shall be met. Something must be done. My will must function. Here again we may say that the volitional activities are not merely a by-product of the intellectual and feeling processes. The tendency to react is more or less inherent as soon as the situation develops enough so that I know what it means. But effective action is not likely to grow out of blind impulse to do. I might rush ahead and do all sorts of foolish things in my eagerness to help. It is important that I know what I can do and that I hold myself to the line of action that I know to be best. This may be to run to the fire alarm box and call up the fire department rather than to rush headlong to the fire and do the first thing that is prompted by chance. Will implies guidance, direction, control of action. If my intellectual activities have made me comprehend the situation and have enabled me to project a plan of procedure, and my feelings have so identified me with

the situation that I am driven to act just the same as if my own fate depended on doing something; then will consists in holding myself steadily and persistently to the plan dictated by intelligence instead of allowing activity to take a random and aimless course. It isn't the amount of energy that is expended that indicates will; it is rather the tenacity and intelligence with which one carries through a project, holding himself strictly to relevant lines of action. Thus we see intellect, feeling, and will as functions of the mind each having its own specific task in adaptive behavior. They are organically and dynamically related to one another in a complete whole of activity.

If we should work out our illustration in more detail we should find that intellect, feeling, and will are interdependent and interrelated throughout the whole mental crisis. The intellectual activity is not completed before feeling responds and volitional tendencies manifest themselves. Undoubtedly the minute the large, heavy mass of smoke appears and is recognized, my feelings are aroused, and I am prompted to act. The stirring of my feelings gives an added impetus to further intellectual activities; I observe more closely what is happening. And as I see more clearly the nature of the situation my feelings are still further aroused. Under the impulse of this quickening of my feelings, my imagination is stimulated; sugges-

tions of things to be done flash rapidly through my mind. The more relevant these suggestions appear the more do they arouse hopeful feelings, joyful anticipations of the rescue of the victims. This account has given only a slight intimation of the intricate interplay of intellectual and emotional processes in their actual effect on each other. Volitional tendencies are intertwined all the way through this interplay of feeling and thought. The intensification of feeling at any point, providing it is not excessive feeling, acts as a spur to thinking and tends to push the self more vigorously into both mental and physical action; there is something propulsive about it. Feeling cannot be isolated from will, it is a dynamic factor in will. The clarification of thought, the clear grasp of the situation and what it demands, is the guiding element in effective volition. At every stage in the critical situation confronting me, I must control both my thought processes and my motor tendencies and see that they move in the path of largest relevancy. Such control is will. But I cannot find this element of control in any separate faculty of mind. It is partly the constraining influence of my feelings and ideals determining me to certain choices of behavior rather than to others, and it is partly the guidance of my action by my deliberation and my trained intelligence.

This doctrine of the organic unity of intellect, feel-

ing, and will has very great significance for education. It strikes at once at the root of a great many discontinuities of educational practice. There can be no magic set of exercises cunningly devised by the schoolmaster for training in isolation, or separately from one another, the various faculties. The mystical value of syntax and of syllogisms for training the reasoning faculties is gone. Reasoning is not an end in itself. Normally it represents an effort of the mind that occurs when it is worth while to reason to get something done in which intellectual activities can play a part. Neither is it a normal process of training the will to set it to work on the educational stone pile. Will does not function that way in the real world. Effort is put forth most freely and lavishly on things that have a meaning and significance and which the individual feels as worth while. Merely overcoming obstacles under external compulsion may produce the weakness of will characteristic of the slave. The cultivation of the will is in large part a matter of the dynamism of ideals. The child's will is no exception to this principle. It must be trained by exercise voluntarily undertaken to accomplish tasks that are vital to the self. I would rather have a pupil throwing his whole self into a task because he sees its significance and it seems to him abundantly worth while than to have him become a dilettante in effort in just getting a

safe passing grade. The training in will in the former case is likely to make for a larger success in life than in the latter. This does not mean that one should not be trained in the school to face and conquer disagreeable tasks. The virtue, however, must not be assigned to the disagreeableness but rather to the strength, force, and grip of the ideal that the pupil knows and feels is worth sacrificing for. The same point of view holds for the school training of the feelings. A wholesome life of sentiment and appreciation must be developed from experiences in which feeling has a value and is not merely an effervescence or affectation. Much of the so-called appreciation of art, music, and literature is purely conventional. It is the phonographic record of the critic, not the inner response of the individual. This is bound to be the case when training in art appreciation is made an isolated thing in the school. Pupils must be confronted with situations in which the feelings are generated that call for the various art forms. Crude drawings, simple songs, ungrammatical compositions are acceptable at the first if they have the merit of being real, and the emotions which they express are genuine. Experience must be enriched with art expression and with art forms relevant to the stage of the child's experience if he is to attain real appreciation. Social sympathy runs the risk also of becoming conventional. The case of Rous-

seau is a classic illustration of this. He expressed the most beautiful sentiments about parenthood and the care of children; his own children were sent to the orphan asylum. In a small college located in the heart of a wholesome, democratic, agricultural district, the wife of the president was heard to gushingly remark, "How I do admire the boy who is so ambitious for a college education that he is willing to work his own way!" As a matter of fact this was just a bit of popular American sentiment that for her was purely conventional, if one can judge of it from her actual attitude toward these same young men. The fundamental social sentiments that underlie democracy cannot be taught by precept alone. They may read well in books and appeal to the imagination, but they will not grow and take vital root in the soil of the heart where the practice of the public school favors snobbishness.

The Idea of Function in Education

The idea derived from biology.

From the biological point of view all living things meet their needs through processes of adaptive behavior. Evolutionary theory teaches us that this adaptive behavior itself depends on specializations of structure that have been built up through successive generations by minute variations that have proved to be useful. Organisms in which useful variations occurred

had an advantage in the struggle for existence; they survived and propagated their kind where others perished. Hence we come to believe as a general principle that every characteristic of a species of plants or of animals has come to be what it is because in the various stages of its evolution it has served a useful function. The spines on the cactus of the desert are not merely interesting freaks of nature; they represent survivals of countless variations that contributed to the life of the species by saving them from the destruction of browsing animals seeking food in a region of comparatively scant vegetation. The diminution of foliage and the evolution of woody fiber contributed also to survival by preventing rapid evaporation of moisture. Thus we explain the characteristic features of the cactus. The evolution of the horny hoof of the horse had a value in enabling him to run faster over the plains in the search for food or in his attempt to escape from his carnivorous enemies. In man, the evolution of flexibility of arm and of hand made possible the use of tools and the application of his growing intelligence to the arts of life. From the biological point of view, the various mental, moral, and social traits of man have functional significance. The evolution of music, art, and religion would be explained in the same way; they have had some value in the determination of adaptive behavior.

Function *versus* structure.

The words "function" and "functional" have come into common use to emphasize several related points of view which are nevertheless different enough to cause trouble unless their meaning is cleared up. One of the uses of these terms is to point the contrast with an older point of view in science and education which emphasized the study of structure. In botany, men studied the structure of plants, analyzing specimens, comparing them with one another, and classifying them into species according to the outstanding similarities of their structural features. The problems of botany were largely those of identification, description, and classification. The theory of evolution centered attention on a new class of problems, those of genesis, growth, and function. We study the methods of life that are characteristic of the different plants. We try to find out what are their characteristic modes of adaptive behavior and what their significance is in the habitat of the plants studied. How do these plants meet their needs? In the meeting of their needs, what specializations of structure have become significant, and why? What essential work is done by leaf, root, bark, etc.? and how is it done? Classification still is necessary, but it is made from a different point of view, not based wholly upon structural likenesses

but more particularly on evidence of like heredity as seen in the similarity of life processes. The same transformation has taken place in the zoölogical sciences, the same shifting of emphasis from the structural to the functional point of view.

The changed point of view from structure to function may be illustrated in two common school subjects, physiology and civics. In the older physiologies a great deal of attention was given to the analysis of the bodily structures. We studied the skeleton, learning its main divisions and all the bones of the body. We studied the muscular system and the nervous system in like manner. We learned the location, size, and structure of all the internal organs. Enumeration, classification, and description were the big things. At the present time, we approach the subject from the angle of the needs of the organism and the functions that are necessary to the maintenance and perpetuation of life. The various specialized structures and organs of the body are studied to find out how the necessary activities are carried on. The primary questions are not, What is the heart and where is it located? What are the lungs and how are they composed? etc., but rather such questions as these: Why must the blood reach every part of the body, and how does it do this? How are heat and energy generated, and how are the waste products of combustion eliminated? Structures

are studied, of course, but they are seen as mechanisms that have evolved to perform more adequately necessary functions. From this point of view in physiology, a larger emphasis is put on hygiene and a relatively smaller amount of time is given to the mastery of anatomical details as mere matters of fact. In the teaching of civics it is easy to see this same shifting of emphasis from the structural to the functional point of view. We used to start with an analysis of the great departments of government — legislative, judicial, and executive. We learned how these are constituted, what are the officers in each, how they come to these offices, their qualifications, terms of office, salaries, prescribed duties, etc. To-day we start with the problems of social, or community, life. What things have to be done when people live in communities that do not have to be done when they live in isolation? How will the community get these things done? In other words, we raise the question of social needs, and then we study the governmental machinery that has been developed to meet these needs. Here, as in physiology, the point of view is that of function, and structures are studied to throw light upon the methods by which these functions are carried on. The constitution of the United States is not viewed as so much given material to be memorized, but rather as representing special organizations of governmental procedure

designed to meet real needs and to be understood in the light of the conditions which called it forth.

If the reader will compare the older textbooks in grammar with the more recent ones in language, he will see this same shift of emphasis — more attention given to forms as mediums of expression and less to logical details of analysis and diagramming. Geography is much less structural, analytic, and purely descriptive; and it is becoming more and more a study of the methods of human life as determined by climatic and physiographic factors. History, too, is much less a matter of records of events to be learned and more a matter of principles of the development of civilization and of the life of nations. Ethics and religion are stressing much less the matters of precept and creed and much more the methods and activities of right living. Almost every subject taught in the schools has felt to some extent the influence of the theory of evolution in this respect, the tendency to throw into the foreground the idea of function and to subordinate that of structure to the part that it plays in perfecting functions.

Function *versus* faculty.

In psychology, the term function is now commonly used in contrast with the idea of faculty. The older psychology used to speak of the faculties of intellect,

feeling, and will; the faculties of observation, memory, judgment, and reasoning. This word faculty implied some special innate power by reference to which you could explain all the mental actions of a certain class that occurred. Faculties were thought to unfold from within according to the laws of their nature in the process of growth and education; or they were sharpened, disciplined, or trained by the exercises of the school. The term function implies merely the organization of mental tendencies and activities into a mode of mental behavior. Just as I may organize my motor tendencies and activities into a mode of behavior that I call clasping my hands, or whittling with a knife, or skating; so I may organize mental tendencies and elementary mental processes into definite modes of mental behavior such as recalling at will certain facts useful in my business, noticing or observing the fine points of a horse or of an automobile, solving of problems in algebra, etc. There is no faculty of memory, of observation, of reasoning to start with in these cases any more than there is a faculty of clasping the hands, of whittling, or of skating lying back of that class of activities. The term function may be applied to any set of connections that has been established between situations and the responses which the individual makes to them. "A mental function refers always to some *actually or possibly observable events in*

behavior, not to any mythical entities beneath behavior." [1]

The ability to remember the ten leading dates in United States History is a mental function in the sense of the word that there has been established a definite mode of mental behavior dependent on a set of connections fixed between certain dates and the responses of naming events corresponding to them. This mental function is very narrow, but it may grow by the addition of new bonds of connection between events and the dates corresponding to them. It does not grow by any process of unfoldment from within itself; though it does presuppose a natural capacity which may differ by many degrees among individuals from the feeble-minded up to the most intelligent. The function, however, is just as narrow or just as broad as it has been made in the experience of the individual. The memory function under discussion implies nothing as to the memory of football scores, of telephone numbers, or of formulæ of algebra. It may be broadened so as to reach over into these fields only by setting up specific bonds, or ties of connection, between the matters of fact concerned and their recall. Memory as a mental function is nothing but a set of organized modes of mental behavior with reference to

[1] Thorndike, "Educational Psychology, Briefer Course," p. 181. See the entire passage, pp. 173–182.

certain bodies of fact, dependent for its excellence upon actual ties of connection that have been made in experience. It may be good in dates of history and poor in grammar; good in mathematics and poor in science.

What we have said about memory as a function gives the point of view for conceiving of the functions of observation, judgment, reasoning, will, and feeling. The same point of view may be applied to moral and social functions. Honesty, for example, is a mode of social behavior which consists in very definite and specific bonds of connection between certain situations and the responses appropriate to them. The only test of the moral function is to be found in specific cases of behavior.

Functions may be called general when the same set of connections provides an organized mode of behavior that meets the needs of a whole group of situations of the same kind. It is one of the great tasks of education to develop such general functions. This would be illustrated in a subject like geometry by the mastery of modes of attack upon problems, methods of procedure adapted to the various classes of problems — direct, indirect, *reductio ad absurdum*, method of limits, etc. — and the controlling ideas involved in definitions, axioms, and proved theorems.

There is a sense of the word also in which the term function has a prospective reference. For example, connections of various sorts have already been established within the field of history to the point that we say that the man has a good memory for history, meaning that he can memorize new material easily. He has gained control of a set of memorizing habits, that is, a mode of behavior, or function, in the memorizing activity. But that this is different from the so-called faculty of memory is evidenced by the fact that his ability to memorize new bodies of material in history does not necessarily give him any added power in memorizing material in mathematics that is unintelligible to him.

The significance of this doctrine of function as opposed to faculty is very great when applied to education. It makes it very clear what the task of education is. We have to find out what kinds of knowledge, skill, moral and social reactions are needed for life and set up in the experience of pupils the actual connections that will establish them. We cannot lump the ability to spell, for example, off on to a mystical faculty of some sort. It is wholly a matter of organized modes of mental behavior in certain situations. It is a matter of establishing connections between sounds and written symbols in specific cases of through, believe, separate, etc. We have to find out what words are needed in

life and, under the proper conditions of age and stage of development of experience, see to it that the right habits are formed and fixed. When it comes to abilities in reading, arithmetic, geography, language, manual arts, etc., the same principle holds. There is no mystical faculty of this, that, or the other sort that we can discipline by some magic set of exercises and then turn it loose to operate of its own accord. Learning is everywhere a matter of establishing specific bonds of connection between situations and the motor and mental responses appropriate to them. The more carefully a teacher analyzes the subject matter taught with reference to the specific significant responses of ideas, feelings, or of motor activity that are to be secured, the more likely the instruction of the classroom is to accomplish its legitimate aims. The more we trust to vague general notions of development, reasoning power, faculty of memory, executive ability, cleverness, etc., the less likely are we to reach any specific goal of achievement in the educative process.

Use of the term functional.

The term "functional" is applied both to the use of subject matter and to the method of instruction. This is the most common pedagogical use of the term. Subject matter is said to be functional when it meets a need in a specific situation in the life of the pupil.

The method of instruction is said to be functional when it concerns itself with the awakening or development of needs on the part of children and their satisfaction as opposed to the method of assigning tasks or imposing lessons to be learned because the facts will sometime become useful. If children have had actual experiences calling for the use of number relationships until they realize that there would be an advantage in handling these number relationships more rapidly, then it would be functional to teach the addition combinations, or the multiplication combinations, systematically and drill on them until they are brought under ready control. This would be true even if there have not arisen in experience needs as yet for all of the combinations, provided there has been enough experience of need for the class to see and to feel the worth of bringing them all under control. The subject matter taught in this case would be functional, too, because it is relevant to actual experience and plays a part in the perfection of that experience. To teach reading before the child has any interest in stories would be to teach it before the need for it has developed and hence would not be functional. To plunge a class suddenly into Latin or chemistry or physics without developing any consciousness of need for these things is a violation of the principle of function ; and what is true of the subject in general is true also of every topic in the subject.

The ideal of function in method is the facilitation of some sort of behavior — mental, motor, social, or moral — at the point and under the conditions of actual need for some specific knowledge, skill, or ideal. Some people think that because they are teaching useful things their instruction satisfies the ideal of function; but this is not necessarily true. A thing may be useful but not useful here and now in the developing experience of the pupil. To be functional it must meet an existing need and not merely a prospective one. Skill in teaching consists very largely in transforming prospective needs into existing ones. Neither is the functional to be identified with the practical. So long as that which we teach meets a need that is real in the experience of the pupil, whether that need may be classified as practical, theoretical, moral, social, or religious, the method which assists the pupil in meeting the need is functional and the subject matter which satisfies it is functional.

Another use of the term function.

There is a mathematical use of the term function that is not inappropriate to biological situations. In algebra, when a certain quantity, x, in the equation has a value which depends on that of another quantity, y, so that the value of x changes with every change in the value of y, then x is said to be a function of y,

expressed $x = f(y)$. This would be evident in such an equation as $x + 2y = 10$. In this case, if $y = 1$, $x = 8$; if $y = 2$, $x = 6$; if $y = 0$, $x = 10$; etc. In like manner x might be a function of several variables. The area of a rectangle, for example, equals the product of its base and altitude; if base and altitude were continuously changing at the same time, then it is evident that the area would be a variable that might be expressed by saying that it is a function of the base and the altitude. To apply this idea of function to our discussion of the interrelationship of intellect, feeling, and will (p. 22), it would be true to the conception there developed to say that intellect is a function of feeling and will, feeling is a function of intellect and will, and will is a function of feeling and intellect. Using the initial letters of intellect, feeling, and will as symbols, we would have the following three formulæ: $I = f(F, W)$; $F = f(I, W)$; $W = f(F, I)$. There would be this difference however from a mathematical formula, we cannot formulate the relations between the quantities in exact terms. The first formula translated into educational situations would mean that the intellectual activity of the pupil engaged in any lesson will vary with two things — the strength of his feeling, or sense of worthwhileness, and the strength of his will. The second formula would mean that the feeling, or appreciation, of the pupil is a vari-

able dependent on his understanding of the significance of a thing and his will to accomplish it. The third formula would mean that will is a variable in a situation in which feeling and intellect contribute something. The pupil puts forth more effort on something that he understands and which he appreciates.

This way of thinking of the interdependence and interrelation of all the factors of a human situation may be extended to take account of the physical, social, and moral as well as the various aspects of the mental. Taken in this way, the idea of function is very suggestive for education. Suppose we apply it to a particular case and see what it would mean. Take the case of the apparent stupidity of Willie Jones. Offhand the teacher and the supervisor both say that he is stupid. But what is stupidity? Is it a fixed and final thing? or is it a factor in a complex situation, varying with the nature and relationship of the other factors to one another? Perhaps $S = f(A, T, M, O, \text{etc.})$, in which the symbols stand for the following: adenoids, timidity, malnutrition, outside work selling newspapers early in the morning. If stupidity is found to be a function of such a set of variables, then we know what to do about it. Scolding or punishing won't do any good. It isn't anything that can be remedied by a direct attack. We must change the value of S by changing the values of one or more of the variables

upon which its value depends. His adenoids must be removed, his timidity be overcome by a little more effort on our part to draw him out and encourage him, attention must be given to his diet either through advice to his mother or through the provision of a school lunch, and his outside work regulated or shifted. The badness of many a "bad boy" is a function of perfectly definite and ascertainable variables which give us the key to the method of changing it. The heedlessness and indifference of another pupil is a function of variables that we could discover by patient investigation. In the work of the school, the conditions which affect any situation are so complex that almost any conceivable undesirable result can be remedied by finding out of what set of variables it is a function and operating upon them.

Factors Involved in the Educative Process

If we are to apply to the study of educational principles the biological conception of meeting the needs of life, we shall have to raise the question of the factors involved in the process and the part that each plays. The two primary factors are the child, or the pupil to be educated, and the curriculum, or the educative subject matter. These are inherent in all learning, or modification of behavior in the light of experience. The child is the center of needs that must be met if

life is to be maintained; the subject matter is that which satisfies or meets needs. In its lowest terms education can go on without teacher, without conscious aim, without organized and directed method. But intentional education involves an understanding of the aim or goal that ought to be reached in assisting natural processes. It involves also a certain amount of control of conditions and organization of processes to insure the meeting of needs necessary to the best adjustment. Method does not leave the educative processes to chance, but guides, directs, and controls them with reference to the highest efficiency. The conduct of education with reference to specific aims and by controlled methods of procedure presupposes a teacher, or group of teachers, trained and intelligent enough to intervene at the right time and under the right conditions to assist nature most fully in her educative task. The general plan of our further discussion is thus determined by these five factors in the educational situation. Genetically, or in terms of its coming to the consciousness of the race, the aim of education does not come first; but for purposes of our discussion there seems to be an advantage in considering first the meaning and aim of education, to be followed by discussions of the child, the curriculum, the method, and the teacher.

Summary

Education is nowadays conceived in biological terms. We try to find out what the needs of life are and the methods by which they are normally met in human experience. Conscious education organizes, directs, and controls the natural educative agencies and processes to make them more efficient.

Education is functional; it plays a part within a living whole, called an organism. The outstanding characteristics of an organism that are most significant for education are the following: an organism has needs; it is capable of behavior; this behavior may be adaptive, capable of satisfying needs; in the activity of the organism all parts, organs, specialized structures, and physical and mental tendencies are interdependent and interrelated. Social groups, both natural and artificial, exhibit characteristics which make it appropriate to speak of them as organic unities, though not organisms.

The processes by which organisms meet their needs are called methods of adjustment. Adjustment is not something mechanical, but vital and dynamic; hence education is a dynamic process, going on in response to inner needs and by means of self-activities. Human adjustment involves three factors: (1) the environment to which the individual responds — everything physical, mental, and social which is capable of influencing him; (2) the human individual, with an original nature which is dynamic, under the pressure of insistent needs impelling to action; and (3) an action system which is imperfect at birth and which develops through a long period of time. Because the human child is confronted with an environment which is complex and ever changing, because his own needs multiply with his own development and with the progress of civilization, and because he has an action system that is imperfect at the start, necessitating much trial and error before adjustments are effected, conscious education becomes necessary to facilitate learning and make it more rapid and efficient.

The biological conception of education puts into the foreground the ideal of the whole self. Mind and body cannot be educated in isolation from each other. Physical education has a mental aspect, and mental education is bound up with bodily conditions and with motor activities. In every school task intellectual, emotional, and volitional processes play a part, each being necessarily involved; hence methods of instruction that ignore any one of them lack vitality and the normal reality of life. The biological conception contributes to education the idea of function. With this idea in the ascendancy we tend to put less stress on the analysis and description of structure and more on the processes of life, to explain activities not by referring them to mystical faculties but rather to bonds of connection established in experience between situations of life and the responses that meet needs, and finally to teach children at the time and under the conditions that subject matter and method will facilitate learning processes already under way or that are incipient, instead of forcing instruction upon them in anticipation of future needs. Even the mathematical conception of function is valuable for education in so far as it suggests methods of controlling refractory elements of a situation through changes in other elements dynamically related to them.

Supplementary Readings

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CHAPTER II

THE MEANING AND AIM OF EDUCATION

Why is it necessary to define the aim of education? Should the aim be determined subjectively or objectively? How does the biological conception of education suggest an objective standard? and what standard is suggested? What necessary elements in the aim are suggested by the doctrine of adjustment (1) as applied to the human individual, (2) as applied to society? Do the individual and the social aims of education conflict? or are they correlative? Is the aim of education to be realized in the present life of the pupil? or at some future time? or does it have a two-fold reference?

The Need of an Objective Standard

Chance shots are not very likely to hit the target. Good gunning is dependent on the knowledge of the goal and on the ability to control eye and hand in the process of shooting. In social and intellectual matters, however, it is very often difficult to determine what the goal is. Subjective interests and attitudes are likely to enter in, and we know that these vary greatly among the best of people. It is difficult to get a perfectly objective standard. This is particularly true

of education, which touches the lives of us all so intimately. Every man tends to set up his own judgment as superior and as decisive in the matter. In this respect, we are not much different from the people of Athens in the days of Socrates.

Socrates' standard of function.

In the time of Socrates it was quite a popular view that there was no such thing as a standard either of knowledge or of conduct. It was held by the sophists that all things are what they appear to be, but this appearance is different for different people and even for the same person at different times. There is no such thing as knowledge, only individual opinion is possible. From this position it was an easy step to the view that there are no standards of right and wrong. These are matters of individual judgment. Right and wrong are purely relative to the individual and his interests. This easy-going philosophy was abhorrent to the stern Socrates. He was sure that it must be wrong because it disrupted the most precious values of life; it destroyed the moral sanctions. He attacked the philosophy of the sophists on its own grounds. He also appealed to actual experience. He studied in particular the activities of the artisan class. He found people making sandals, swords, armor, helmets, etc., according to a plan. When he questioned

these skilled workers, he discovered that they were not making the things of their craft according to their own whims or caprices. They had a standard of excellence toward which they were striving. These things were all to be put to some use, and they had to be made in such a way as to serve their proper function. He attained the highest excellence in his craft who knew most definitely what the function of that which he made was and who directed his activities with the greatest skill and intelligence to the production of the article that would best fulfill its function. This could not be a matter of his own opinion, it was a perfectly objective end that he sought. He was a good carpenter, a good shoemaker, a good boatmaker, who made the best product for use. Socrates believed that this principle applied in social and moral situations as well as in those which were industrial. His chief criticism of the teachers and the politicians of his day was precisely at this point. He claimed that they neither knew what constituted the good, or excellence, in the activities with which they were concerned nor did they have the skill by means of which it could be attained. They trusted to vague subjective standards rather than to clear-cut objective standards. Consequently they moved continually within the circle of popular prejudices, preconceived ideas, and subjective interests.

The need of an objective standard in modern education.

While the subject of education has received a great deal of careful attention in the past three centuries, we are still subject to great waves of impressionism. There is very wide variation in the formulation of the aim of education. This difference of opinion perplexes us, and we wonder whether there is any use in trying to attain an objective standard. Ask the trained scholar what the aim of education is, and he is likely to say knowledge, culture, or discipline, or possibly a combination of these. Ask the business man, and he is likely to project the ideal of industrial and mercantile efficiency. The artisan is likely to think of vocational training, the minister of ethical and spiritual goals, the social worker of good citizenship. The philosopher will formulate the aim of education in terms of self-development or self-realization. To what is this variety of formulations of the aim of education due? The complexity of the educational process has something to do with it. People see education from so many different angles, and they emphasize different values according to their own predominant interests or conceptions of life. Their standards partake too much of the subjective element and conform too little to the ideal of objective function. The varying formulations of education, however,

have considerable value. They are not so much untrue as they are partial and inadequate. They need to be harmonized and correlated with one another by reference to some more fundamental principle. Can we find such a principle?

The standard of function in education.

Socrates found the standard of the good in the function that a thing is to perform. I believe that he was essentially right and that the Socratic principle is suggestive to us. In education we must raise this question of function and answer it before we can formulate the aim of education in objective terms. We must ask what part education plays in some larger whole of activity. It is precisely at this point that the current tendency of the mental and social sciences to adopt the biological point of view becomes significant for education. The Socratic method revealed quite readily the objective nature of the standards of the crafts; it could not be applied so easily to the social sciences. On the basis of the contribution of biology we can solve more readily the question of the function of education and thus arrive at an objective standard for the educative process.

Formulation of the Aim of Education

We are seeking the aim of education in some function which it performs in meeting the needs of life. But conscious, or intentional, education is designed to aid the natural processes and bring them up to a higher level of efficiency. It becomes necessary, therefore, to ask what are the processes involved in the attainment of adjustment at its higher levels and how may education direct and control these processes.

Appreciation of values.

All processes of adjustment center in the meeting of needs. This is what gives meaning to the movements of the amœba, the growth of spines on the cactus, the instinctive responses of animals, and the voluntary acts of man. Wherever there is a need to be met, that which meets it may be called a value of life. The various plants and animals which serve the purpose of food are direct values of life. The knowledge, the tools, and the methods of agriculture through which supplies of food are maintained are indirect values of life. The story which the child enjoys is to him an immediate and direct value of life; the knowledge of reading by means of which he can get the story for himself is an indirect value. When men are civilized, art, literature, science, and the ideals of the Christian

religion, since they meet his higher needs, are either direct or indirect values to him.

Needs may remain below the level of consciousness, or consciousness of them may never become explicit. The needs of plants all belong in this group. Children may need food or sleep and not know what they need; they are just uncomfortable, restless, and nervous. Men may need refreshment of mind and spirit and not know what is the matter. In all these cases, if the things that would meet their needs were brought to them, there would be an appropriate response. However, needs are likely to be met more effectively if we become conscious of them. The consciousness of need is likely to carry with it a tendency to focus more sharply on that which satisfies it and to deepen and intensify our appreciation of its worth. This appreciation means a stronger grip on the feelings and thus becomes the drivewheel of the effort that must be put forth to meet our needs. Appreciation of value of some sort, of the worthwhileness of something to *me*, is the basis of motivation, and where there is strong motivation something is likely to be done.

It is not educationally sufficient to have an intellectual consciousness of values, a knowledge of what is most worth while. In spite of knowledge, some people prefer the lower to the higher satisfactions. It is necessary for education to concern itself with the

problem of training pupils to appreciate the things of most worth. Education is a matter not only of ideas but also of ideals. What are the great outstanding ideals that ought to dominate life in a civilized society? What are the things of proved worth? Somehow the school must find ways and means of making children conscious of their need of these and of making them glow with a warmth of feeling — of making sure that they are fused and welded with all the interests of the self in such a vital fashion that it is impossible to surrender them, impossible even to live without a constant attempt to incorporate them into one's life. Pupils must be so taught that when they go out into the work of the world they will find their most genuine happiness in living in harmony with the highest ideals. Men become crooks, sharpers, criminals, and social parasites (idle rich and hobo poor) very often not because they do not know better but because they find enjoyment and satisfaction in the wrong things. Unfortunately the higher values do not appeal to them. To measure the worth of things in other terms than money is to many people, poor as well as rich, like speaking in an unknown tongue. In a world in which the material aspect of things stands out so prominently as it does in the present age, it becomes all the more important for the school to develop appreciation of the higher values of life. Otherwise the adjustment

of the individual and of society is likely to be effected on the lower level of meeting needs, both self and society failing to attain the higher values which constitute the most precious heritage of the human race.

Judgment of values.

Effective adjustment depends not only upon consciousness of values but also upon the ability to determine which values are of *most* worth. There are hundreds of things that a farmer may raise that have some value; his problem is to grow those things that a careful study of conditions indicates are of most worth for him to undertake. Likewise there are thousands of things that a physician might learn that would have some value, but his success will depend on his grasp of a comparatively small number of significant things. We may eat candy because we like the taste of it, it has a value of pleasantness to the palate. But the real value of candy has to be judged in the light of its effect upon the entire organism. The more varied, numerous, and complex our needs, the more important for our welfare does it become that we pass right judgment on the value of things. Otherwise we are likely to sacrifice some higher and more comprehensive good for something that is immediately satisfying but of much less relative worth.

In a world as complex as ours it is difficult to learn

what things are of most worth. Here is found one of the central problems of education. Pupils must be trained in the processes and power of judging fundamental values. They must come to know the meaning and significance of the ideals and institutions of our civilization. Their insight into values must go beyond the vocation that shall yield them a living. No man is equipped for life without some vocation, neither is he so equipped merely because he is trained for a vocation, no matter how expert he may become in it. He may have very distorted ideas of personal responsibility and of the relation of his vocation to the good of society. It is a very deceptive half-truth that is sometimes flaunted in the face of the unthinking by popularity seekers when they say that "a man is educated if he is on to his job." Life cannot be summed up in terms of one's job or of his capacity to make money. A man may be a skilled railway engineer, "on to his job" every minute that he is on the train, and yet he may sell his vote on election day. Farmers sometimes raise big crops and make much money for a series of years only to destroy the fertility of the soil for the next man. A brilliant trial lawyer sometimes frees his client to the detriment of society. Even a thief may be so thoroughly "on to his job" that he can be classed as an expert and professional. Probably the vast majority of the prisoners in our jails and pen-

itentiaries are there not because they were driven to crime by lack of employment, but because at some point or other in life they failed to make the right judgment of values or were lacking in appreciation of them. The question of education is in large part one of training pupils in right judgment of values. They must learn how to determine for themselves what things in life are really most worth while, if they are to play their part well in the modern world.

Control of values.

One may know aright the things in life that are of most worth, and in contemplation of them be suffused with a fine glow of feeling, and still be unable to incorporate them into his own life. For example, he might know the worth of money and have a very keen, intelligent, and legitimate desire for it, and yet he might be master of no occupation through which he could secure a competence. But when one both knows and appreciates aright the values of life, the conditions are favorable for bringing them under his control, *i.e.*, for realizing them in his own experience. But such incorporation of these higher values, which satisfy needs more adequately, does not follow of its own accord. Effort must be put forth. This effort may be of the random, hit-and-miss, trial-and-error sort; or it may be highly organized, skilled, and

adapted to its purpose. Here is where education aims to perform another service. It aids pupils to acquire whatever of knowledge, technique, skill, ingrained habit, mastery of mental and motor processes are necessary to secure for themselves and others those things which are of most worth in life. Through education they should be able to satisfy more freely and flexibly their needs at the level of moral, spiritual, civilized human beings.

Summary.

From the point of view of the individual concerned in the educative process, the aim of education might be formulated as follows: *the function of education is to assist pupils in the attainment of right judgment, appreciation, and control of the values of life.*

The Social Point of View

Adaptive behavior in man is attained through the coördination of different motor and mental processes into organized modes of procedure. To walk, the child has to bring the activities of the legs into relation to each other in a rhythmic series of movements and at the same time maintain control of certain muscular activities involved in balancing and in carrying the body forward. To pick up a plaything, he has to bring the activities of the eyes and of the hand into

relations with one another in a task which requires their coöperation. To read a story, it is necessary for him to coördinate many motor and mental processes. In the meeting of our numerous needs we have to establish a great many modes of behavior representing a very large variety of motor and mental coördinations. But there are many needs of men that cannot be met at all, or that cannot be met well, except in coöperation with other people. The activities of all in the group must be coördinated into one organization of activity bearing on a common end. This means that there is such a thing as a social coördination of activity. This is well illustrated in the case of the rowing of a crew. The activities of no individual can be directed just as he pleases. The succession of strokes of all the rowers must be brought into the same rhythm — there must be the even and rightly timed forward sweep of all the oars and the uniform and measured pull of all the blades in the water. The mental processes of attention and of perception of the individuals may not wander at will but must be kept relevant to the common task.

The existence of a social group of any sort, whether developed by natural selection in the course of social evolution or whether organized voluntarily and intentionally, presupposes certain common needs, aims, and purposes and also the coördination of the activities of all into modes of social behavior adapted to the accomp-

lishment of the common purposes. In the family, the clan, the tribe, the state, the church, the school, the business corporation, the labor union, the social and literary club, etc., we have such social coördinations of individuals. The emergence of social groups is not only indicative of common needs but it is also the occasion for the appearance of new needs growing out of socially organized endeavor. The meeting of these needs requires specialization of activity within the group. The great mercantile corporation, for example, has its specialized activities of advertising, of buying and selling, of accounting, of distribution of profits, etc. The modern state has a bewildering complexity of specialized modes of behavior. When we think of our pupils as destined to live in a highly organized social order, we can see how inevitable it is that they will need the guidance and direction of intentional educational procedure. We shall have to ask what the aim of education may be when conceived from this social point of view.

Aim of Education from the Social Point of View

If we call all of those things which contribute directly or indirectly to the satisfaction of human needs through social coördination of activity by the name of social values, then we can use the formulation of the aim of education already given, simply by inserting the word

social before *values* and making it read as follows: *It is the function of education to assist pupils in the attainment of right judgment, appreciation, and control of social values.*

Judgment of social values.

It should be one of the tasks of the school to train children in the knowledge of what the interests of society are. The more complex the world in which we live the greater conflict there is likely to appear among the possible values from which we may make choice; hence the more necessary it becomes to be able to judge of relative worths. If children are growing up and are soon to play their part in the life of the social whole, they should be able to pass intelligent judgment upon the legitimate aims and purposes of society. Where individual whims, caprices, and subjective ideals prevail there is certain to be maladjustment and social disorder. Where tradition and the authority of the past dominate the judgment of social needs and social values, there progress is at an end. Social stability and progress can reach their highest level in harmony with each other only where intelligence is exercised on the part of all in the judgment of social values.

Appreciation of social values.

It is conceivable that there might be a very keen intellectual discrimination of social values and yet not an enthusiastic choice and espousal of the things that are of most worth to the social whole. Intelligence might be devoted to the satisfaction of low, materialistic, and unworthy aims. It is necessary for education to develop a high appreciation of the supreme social ideals. Social ideals must come to grip the heart, to live in the feelings and affections of the individual. They must become an integral and dynamic part of the self, so that they press irresistibly for release in conduct. Many criminals and social renegades *know* perfectly well what are the supreme interests of society, but they don't care anything about them. They are perfectly willing to sacrifice the interests of others to the gratification of their own desires. Probably the school has not done as much as it ought to have done in this matter of making sure that the higher and more comprehensive values appeal strongly to youth; that they not only recognize them intellectually but also prize them. From the social point of view this is one of the most important functions of education. The school, however, is not wholly to blame for failure at this point. Society is so organized that its own activities focus rather sharply the attention of children

upon individualistic and materialistic and selfish aims. The other institutions of society, as well as the school, must come to realize the importance of intensifying the appreciation of things that have the larger social significance.

Social control.

Social adjustment at the highest level of efficiency involves well-developed control on the part of society over the satisfaction of social needs. This control is a complex process including several related phases. The meaning of the term and its varied applications must be made clear, if we are to understand the social aim of education.

Meaning of social control.—Right judgment and right appreciation of social values are significant only as phases in the process of control of these values. Judgment is the basis of selection, appreciation the basis of effort to secure. Individuals who are to work together in a common coördination of activity must make like judgments and have common feelings, otherwise effort will not be focused alike. Intellect and feeling, we have seen, function in the determination of an efficient personal will; the same processes are essential in the attainment of a strong, intelligent, and efficient social will. Now education must not stop short of anything less than the formation of the social will. It must be

possible to control social behavior in such ways as will make it certain that social ideals will be realized, that social needs will be satisfied at the highest levels.

In speaking here of social intelligence, social feeling, and social will, it is not necessary to assume anything mystical and mysterious like a social mind or society as a super-person. If we use the term social mind, it must be understood as a convenient term to apply to the fact of coördination of the mental processes of many different people who are directing their activities toward common ends. The state is not a separate entity with a mind of its own, with aims, purposes, needs, etc., of its own. The interests of individuals, in the last analysis, are the ultimate interests; no others actually exist. But when individuals are organized for coöperative endeavor, conditions are so changed that not every individual interest can be regarded as legitimate. That will be the highest type of society in which individuals have the trained intelligence to subordinate certain wishes and desires of their own to the institutions of society because they see in these institutions the necessary means of effective coöperation. These instruments of social betterment may, however, themselves be still further modified, shaped, and controlled so as to perform their functions better and to minister more effectively to the needs of all. Educationally this seems to be an important point

to recognize at this time when we are attracted by the marked efficiency of the autocratic type of state. We must not sacrifice the principles of democracy by training our pupils to accept aims and purposes imposed upon them by a higher authority that is the sole judge of their validity and worth. We must not spell the state with a capital letter and conceive of it as an independent entity, a sort of super-person. There is and ought to be such a thing as social control, but it is a control that should be determined from within the group by means of agencies and instrumentalities of its own choosing for the sake of coöperative enterprise. Education must train the feeling, intellect, and will of individuals for this self-imposed coöperation with all in the interest of all. This is democratic social control.

Socialization of individuals. — I shall discuss three aspects of social control with which education is concerned. They are as follows: the socialization of individuals, the democratization of social institutions, and the control of social progress. The first of these problems is the question of how society controls individuals and what part education has in this process. If our needs are to be met effectively through the social coördination of many people, it is evident that they must all have the disposition to put forth their efforts in common tasks. Primitive people secured this cooperative effort in a variety of ways; but the study of

primitive life reveals two outstanding tendencies that grew up together. One of these was to modify the inner nature of the individuals concerned, the other to resort to compulsion. The first is formative, the second punitive. The formative method of socialization is illustrated by the influence upon the emotions of music, dancing, and the rites and ceremony of religion. Folk lore and hero worship made still further contributions to like-mindedness and common emotional attitudes. Customs grew up which were regarded with veneration, the most important of them gaining in course of time the sanction of law. But in addition to these formative influences upon the mind and heart there was frequent resort to physical force to compel the refractory and non-social to do their social "bit." Modern society seeks to eliminate or transform the punitive process and to rely upon education to socialize individuals through the transformation of their inner nature. Men who judge and appreciate their needs only and always in the light of the social whole of which they are a part are more efficient in social coöperation than those who are compelled to conform to the social will. If education could do its perfect work, physical force could be eliminated from social method. In so far as there still exist anti-social and criminal people, to that extent education (of the school and of society) has failed or is inadequate.

Democratization of social institutions. — The home, the school, the church, the state, the learned professions, the scientific pursuits, the organizations of labor, of trade, and of industry and commerce are all centers of accumulated and accumulating experience. The home has learned much in the matter of character development and the processes of informal education that ought to be made the common property of all for the benefit of all homes, all schools, and all churches in the conduct of their work. The school, the college, and the university have been too much centers merely for the development and preservation of useful knowledge, confining their work of propagation to the few and too narrowly to the young. They are beginning now to reach out and serve all the people. At the agricultural colleges, there is enough known about the scientific principles of agriculture and their application to the various practical aspects of farming to completely transform the processes of food production to the advantage of everybody. But this knowledge gets out from these centers altogether too slowly for society to get the full benefit of these institutions. Much is being done at the present time to democratize the agricultural college, however; it is bringing its services to the people in the remotest sections of the state through demonstration cars, exhibits, experiment stations, short courses during the winter months,

special bulletins, correspondence courses, traveling libraries, etc. At the medical colleges enough has already been learned of the laws of health and of disease to reduce preventable deaths to a small fraction of what they now are. The great problem is to democratize scientific medicine and make it serve the interests of the community more fully. Here, too, it must be said that much has already been accomplished through public boards of health and through the teaching of hygiene. The public library as a social institution has been democratized to a very marked degree. Books are no longer conceived as things that are to be stored away and protected from the ignorant public. They are not for the chosen few trained to their use. They are to be put into circulation as fully as possible. The librarians invent all sorts of methods of getting useful information before the attention of the various classes of people who will be benefited by it. They are ambitious to reach the largest number of people possible and to provide the kinds of books that are needed by any vocational or other group. The same point of view is coming to dominate the public school also. It is a place in which all the children of all the people are to be served as completely as possible. Still further, there is the growing demand for the wider use of the school plant for all the higher interests of the entire community. The state is being conceived more

and more not as constrictive but as constructive, as permitted and required to do all that it can for the good of all the people. And the ideal of service is coming to pervade more and more even the money-making occupations of business and industry. The church, the most vital center of all for the education of people in the fundamental ideals of righteousness, is getting away from its extreme emphasis on creed and individual morality and is preaching more fully the gospel of social righteousness as a democratic demand for the highest well-being of all people right here and now.

It is certainly one of the most important social aims of education to train men and women to utilize to the full all the agencies and instrumentalities of society for the good of all. These institutions must be conceived in the years of school training not as ends in themselves but as means of social coöperation — means which defeat their legitimate purpose and do damage to all if they are subordinated to the interests of the few. Children must be trained to judge them aright, to appreciate them at their true worth, to use them for their proper purposes, and to insist that whatever values are to be derived from them are made known and accessible to all. We have far to go yet before all the institutions of coöperative endeavor are thoroughly democratized. It must be increasingly the aim of education to train social intelligence in this direction.

Control of Social Progress. — The most difficult phase of social control is that of the organization and direction of the social processes themselves in the path of continuous progress. The institutions of society as well as their characteristic modes of procedure are mostly the result of a long period of growth and development characterized almost wholly by the method of trial-and-error or of natural selection and the survival of the fittest. Progress under these conditions is more or less random and haphazard; yet it conforms, as far as it does go, to certain natural principles or social laws. Can we discover what these laws are and bring them under conscious control? When this was done with physical forces an era of rapid industrial progress was ushered in. If we could know and intentionally control social laws, we might make as radical reconstructions of society in the direction of a more efficient and just social order in one century as have been made in the last twenty. Why should not social intelligence be trained and directed to the solution of the rapidly accumulating social problems which confront us? In a sense of the word social control resting upon the scientific understanding of the laws of social progress is a work for experts. In another sense, it is impossible except in a country of general enlightenment and of a highly socialized conscience on the part of all. If education could do its

perfect work both in the training of the social conscience and in the training of the social experts, it would be possible to make over the social fabric so thoroughly that we should have that kingdom of ends which Kant considered the perfect moral order, a society in which every man is considered a center of unique worth, an end in himself, never the mere means to the realization of the end of another, and, I should like to add, never the mere means to the realization of the ends of Society itself personified as an Overman. To put the same thought in other terms, it ought to be possible through the right performance of the function of education to help establish that Kingdom of God on earth of which the Hebrew prophets dreamed and which Jesus proclaimed had already begun in him. Such a function education can never perform, however, if it is narrowly conceived as an intellectual or a vocational matter or both of these combined. It must be an education that emphasizes ideal values, stimulates true social emotions, develops the social conscience in every man, and clarifies, enlarges, and trains his social intelligence.

Correlativity of Individual and Social Aims

The individual and the social aims of education are correlative: each involves the other, and neither can be realized except in terms of the other. There

is no such thing as a mere individual human being. He may and does exist as a separate organism; but he is inevitably born into some sort of social medium. Outside of the social medium he cannot even live a satisfactory physical life; and the needs of the higher life could not be met at all. We are integral parts of the social whole as inevitably as hand, eye, and heart are of the physical body. All individuals and all institutions are interrelated and interdependent; each contributes to (or detracts from) all, and all affect each. The more highly developed the civilization the more is this true. No man produces of things physical, mental, and spiritual all that he needs. He serves all in some one respect, and all serve him in others. In so far as education perfects individuals in any legitimate function, it increases the possibility of their larger contribution to the satisfaction of the needs of all; and, conversely, in so far as it furthers the realization of social aims, it renders the group more efficient in meeting the needs of every individual.

We might put this in another form by saying that what we have called "values of life" and "social values" are correlative. Values of life, the things which satisfy the needs of individuals, become social values when viewed in the light of the larger whole. The individual strong and well in body, trained and enriched in mind, perfected in motor skill, master of some definite

useful vocation, his heart responsive to the best things in life — this type of individual can contribute most to the coöperative aims and activities of the social group. Social values in their turn get their significance solely through their realization in the lives of individuals; for, as we have seen, there is no other place in which they can be realized. It represents, then, simply a difference of temporary interest or of point of view when we speak at one time of values of life and at another of social values. There is an organic and dynamic relation between the two. *Education must so develop and train the individual that by a law of his own life his interests harmonize with those of society, and that society brings to bear upon the life of every individual the highest and best fruits of civilization to such an extent that he is most fully stimulated, vitalized, and enriched with the wealth of racial experience.*

Realization of the Aim of Education

The aim must be realized in the present life of the pupil.

If an aim is to have any value, it must be capable of application in the guidance of the educative process at the point of need. That is always to be found in the present developing experience of the pupil. "The present moment of child life stands out as the

dynamic center on which all future development depends." The pupil is living now, the problems of adjustment must be met as they arise. Education is for the present, not merely for the future. This is one of the most significant outcomes of the biological point of view. We must help the pupil in some way by everything that we do in school to meet an actual need. The aims of better judgment of values, right appreciation of the things that are of most worth, and larger and more effective control of individual and social values must be applied to each day's experience. We must ask whether we are selecting subject matter and employing methods of procedure that realize these aims in the present stage of the experience of our classes.

We must diagnose every teaching situation with these principles in mind. Suppose it is the case of utilizing play. What needs are there in the lives of these children for play? Exactly what will it do for their bodies, minds, social natures? What plays, games, or sports minister best to the particular needs which I find in the lives of these children? Can I so utilize the play impulse as to confront them with situations in which they will be obliged now to improve in their judgment of values, in their appreciation of coöperation, fair play, etc., and in their actual incorporation of the values of health and the social

virtues into their lives? If it is a matter of the teaching of arithmetic, I must likewise raise the question of the needs in the unfolding experience of the class for the further facts or exercises of the subject. Am I sure that the right time has come, that the conditions are right for the lesson on linear measure? Will it help the pupils to accomplish better some project of construction or of business? Has the curiosity and the intellectual interest in some problem made this additional instruction necessary and vital now? In reading and literature, we have to ask whether the beautiful story or poem or drama is fitted to waken now some response of feeling that enriches the pupil's life of legitimate pleasure, or whether it may stimulate within his experience some ideal of character that will operate now to modify his life. The lesson in Latin does not have its value solely in the fact that it helps the pupil to learn more Latin. Why should he learn any Latin? Is it playing a part in his unfolding language experience? Does it have any technical or humanistic significance to the pupil at this stage of his development? What are the values, and am I getting any of them as I go along? Would all that he has done be in vain if he stopped to-day? In geography, history, algebra, and other subjects of the curriculum, I must raise the question continually of the extent to which my pupils are realizing the aim

of education now. Their lives must be enriched in some definable way by the lessons they are studying. If we could get this point of view thoroughly lodged in the consciousness of teachers, it would mean a radical reconstruction in the direction of more definite, specific, and vital teaching.

Social reference of the aim of education.

There is not only a present goal of education but also a remote goal which the teacher must keep in mind. The present tendencies, interests, and needs of the pupil get their meaning in large part from their future reference. They have to be judged in part by what they lead to. To pass this judgment upon them we have to know quite accurately the nature of the world in which our pupils will live, as well as knowing what satisfies their unfolding experience now. We know that they can never live completely except in full, free, and flexible relations to the social whole of which they are a part. This social whole includes not only other people living at the same time, but also an incalculable wealth of racial achievement incorporated in social institutions, social ideals, and the social products of art, literature, science, and religion. The social environment in which the pupil is to live is the repository of all the higher social values. The task of education is to get the child ready for life

in this world of civilization. If we can determine the things that are of most worth in the modern world, that helps to define the remote goal of education. Two points determine a straight line. In education one of these is the present needs of the child, the other is the needs of life in the modern world.

The educational aims which we strive to realize day by day must represent values in the life of the modern world. We are not to give the right of way to subjects or to parts of subjects, to special skills, to habits, ideals, attitudes, virtues, or to elements of the technique of science, art, or vocation on the basis of tradition or authority. From this point of view, the application of the standard to our daily work of instruction requires, in addition to the questions calculated to focus attention on values for the present life of the pupil, also many questions as to the further significance of the satisfaction of present needs. Which of the moving tendencies and interests of children have forward social reference? What is the subject matter that will contribute to this further development? Are the lessons which we are giving in reading, history, geography, Latin, science, etc., doing anything to arouse and define the consciousness of further social needs? Are the pupils under our instruction being equipped by what we teach them in any nameable and specific respects for life in the modern world? Is their judgment of social values being de-

veloped and trained? Are they coming to appreciate and enjoy the things that are of most social significance? Are they coming into control of new social values or getting more secure control of older ones? In so far as we try to answer such questions as these with reference to every lesson we teach, our consciousness of the aim of education has value for us in the guidance and direction of our teaching activity.

Summary

It is not possible to give adequate guidance to the learning processes of children unless we know what is their normal and legitimate goal. Aims of education should not be accepted on the basis of their subjective appeal; objective standards must be found. The biological point of view furnishes the standard of function, or that of meeting the needs of life. This standard is objective, based on the study of the actual lives of individuals and the nature of human society. To meet human needs most adequately, we have seen that men must be able rightly to judge, appreciate, and control individual and social values. It is the aim of conscious education to facilitate the learning processes of pupils to this end.

There is no necessary conflict between individual and social aims of education. The needs of human beings can be met fully only in association and coöperation with others in ways that are advantageous to all. Such coöperation is effective only where individuals are intelligently socialized. Social control is involved in the aim of education, but not social control imposed from above by an autocratic ruler or class or super-personal state. The social control we want is that which comes from within the group and has its basis in the inner consent of all and their intelligent coöper-

ation in ends chosen by them and by means selected or approved by them. Social control has its justification only in the fact that needs of life are met better through it. Such social control is possible only where there is universal public education and all the social institutions — home, school, college, church, state, libraries, professions, industries, and vocations are democratized.

While there is forward reference in the aim of education looking to right adjustment to natural and social environment in adult life, nevertheless the working aim of the teacher and the school must be something that can be realized day by day in the present life of the pupil and the satisfaction of its needs. There is no necessary conflict between the process of meeting the legitimate present needs of life and the larger and more remote social goal. The meeting of present needs may be a process which in itself has a larger outreach and a forward impulse.

Supplementary Readings

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CHAPTER III

THE CHILD

What is the place of the child in the educative process? What light is thrown on this problem by the scientific conception of the meaning of infancy? What is meant by stages of development, and what are the significant stages of development in the life of the school child? By what fundamental principles shall we interpret transitions in growth and development? What are the outstanding characteristics of each transition stage? What are its needs? What are the principles in accordance with which instruction may be given best to meet the needs of each age?

The Place of the Child in the Educative Process

The modern emphasis on the child.

Positive value of childhood. — If it is the function of education to meet the needs of life at the time when these needs occur, then we are committed to the idea that childhood has a worth of its own. No other interpretation harmonizes with the biological point of view. But it is not until comparatively recent times that childhood has been generally conceived as having real significance. It has been looked upon as

a period of life that had to be tolerated for the sake of what would come out of it. It had its interesting phases, of course, for those adults who were so fortunate as to be parents; but for the children themselves it was something to be outgrown as soon as possible. To this end, adult ideals, standards, manners, and methods of procedure were to be imposed upon the life of the child and fixed there as rapidly as possible. Children were to live as little men and women. Those who did so were good, others bad. Occasionally there appeared a genius of rare insight who looked more deeply into the soul of the little child and understood. He stood in reverence before the spirit of youth and appreciated childhood as something of infinite worth. Plato thought it not beneath the dignity of his philosophic pretensions to concern himself about the plays, games, and songs of children. In the life of Jesus, when adult interests clamored for his exclusive attention he deliberately turned aside from them to give recognition to children and to appreciate their worth, saying, "Suffer the little children to come unto me and forbid them not; for of such is the kingdom of heaven." Rousseau saw in the original nature of the child something supremely good, in comparison with which adult nature was foully corrupt. Pestalozzi and Froebel cast aside the adult standards and ideals of the function of the teacher as master and

deigned to live with little children and share their experience. The child's life seemed to them worth while for its own sake; it did not derive its legitimacy and its worth wholly from the fact that it was a stage on the way to the lordly estate of the adult.

Conflict between educational theory and social practice. — The modern child study movement which grew out of the work of Rousseau, Pestalozzi, and Froebel has focused attention sharply on the child, his nature and needs. Education is becoming more and more thoroughly committed to the idea that its function is to minister to the growing needs of children rather than to compel them to learn bodies of fact selected for them wholly from the adult point of view. But the old ideas of the superior and dominating interests of the adult are so thoroughly intrenched in society that the newer regard for childhood still has to struggle for recognition. This is essentially an adult world, ordered and arranged by adults for their own ends and purposes. This is well seen in the use that is made of property. With the settling of the country more fully and with the growth of cities, the natural play places of children vanish in the interest of money-making. Field, forest, and stream no longer invite; for they are appropriated to adult activities. From fishing, gathering wild flowers, hunting for berries and nuts the children are warned by signs of "No tres-

passing." Vacant lots in the cities are gradually closed in by the new buildings which our adult interests in trade, manufacture, and commerce demand. Where they still exist, children must not play for fear of some damage to neighboring property or some noise that will disturb the adults who have forgotten their own childhood. Streets, now appropriated more and more fully by the traffic of adult business and pleasure, have become more dangerous for children than railway tracks. Even the dwelling places of man are built for adult convenience and interests and often cannot be rented by families having children. With play excluded from its natural haunts, the play instincts and the natural craving for pleasure, as Jane Addams has shown,[1] have been commercialized by adults and made to contribute to the adult passion for dividends. Thus have we added insult to injury — children robbed of their birthright are made to pay a price for an inferior substitute.

Growing social recognition of the needs of children. — Fortunately we are partially awaking from our neglect and lethargy, and there is a growing tendency to make more liberal provision for the rights of children. Parks are becoming something more than elaborate ornaments; they are being used as places for play and for nature study. Small playgrounds, well equipped and

[1] "The Spirit of Youth and the City Streets."

supervised, are increasing rapidly in number. Churches are taking more and more responsibility for the provision of recreation and pleasure. Schools are reconstructing their work on the principle that the schoolroom is a place in which children are really and truly to live. Legislation is beginning to curb the mercenary tendencies of employers and parents to utilize child life as a means of gain. Everywhere the child is coming to be regarded as having positive worth, and the period of childhood is to be conserved both for its own sake and for the sake of the larger social significance of a prolonged period of infancy.

The child and the curriculum.

In the old education the curriculum was the center of the educative process. Everything else revolved around it, even the child. Subject matter of education was determined wholly from the adult point of view. The only concession that was made to child nature was to its inferior powers of learning. Subject matter had to be simplified and administered in small doses; but it was not selected with reference to the child's own nature and needs. If the child did not like what he studied so much the worse for him. That was only another evidence of the total depravity of original nature. The very fact that the subject matter was disagreeable was a guarantee of its superior disciplinary

value; its excellence consisted in the very fact that it did clash with original nature, and its mastery represented a step forward in the triumph over inherently evil tendencies and marked some progress toward the virtue of the adult. Under these conditions both school and home discipline was bound to be severe; there was plentiful use of the rod and the ferule. The adult authority and the adult subject matter were supreme, the representatives of virtue triumphant over original nature. And so children dragged their unwilling feet to the "little old red schoolhouse," and when they got there they droned over their tasks and took every opportunity to make all the trouble for the teacher that they dared to.

With the new ideas of child nature popularized by Rousseau and practiced by Pestalozzi and Froebel, the center of educational thought and practice gradually shifted from the curriculum to the child. Everything revolved around the pupil. The dominant questions became, What is his nature? What are his instincts? What are his interests? The watchwords were freedom, self-activity, initiative, spontaneity, unfoldment, hands-off, nature knows best, follow nature, unfoldment from within, etc. There can be no doubt that this represented a very wholesome reaction from that point of view which conceived of children as little men and women and which sub-

jected them to the authority and demands of adult ideals and adult subject matter. But the reaction often went too far. There is no guarantee that in following the natural tendencies of childhood adjustment to the life of the modern world will be secured. Man in order to become man has had to rise above instinct. The life tendencies that account most in the modern world may have their tap-roots back in instincts somewhere, but they have their fine roots in civilization, which has meant radical reconstruction, transformation, and sublimation of instincts.

The educative process cannot be defined in terms of a circle. Neither the child nor the curriculum can be made the center about which all thought and practice are to revolve. The original nature of man and the social values inherent in civilization are both involved at every point and throughout every stage of the educative process. Education is a process of continuous interaction between child and curriculum. Experience is the continuum in which the two stand in a polar relation to each other. The child is not a fixed thing — his original nature is to be reconstructed and developed until it harmonizes with civilized and Christianized human nature. The curriculum is not a fixed thing to be imposed upon the pupil — the subject matter has to be selected continually with reference to meeting the needs of the pupil while at the same

time reflecting the higher aims, purposes, and interests of civilized humanity. There is not one center about which everything educationally revolves, but rather two foci. If we are to use any figure of speech, let it be that of the ellipse rather than that of the circle. Only the figure of speech must not represent static relationships, but dynamic. The two foci, child and curriculum, must not represent two distinct and absolutely unrelated points, but rather at the same time centers of mutual tension and also the pivots about which everything else swings. To think thus of education will enable us to avoid many of the fallacies common to undue concentration of attention upon either the child or the subject matter. The two must be kept related in thought in all our discussion of problems of method, aims, purposes, class management, and school equipment. Even the choice of school desks should take account of the nature of the pupil and also of what he is to be taught.

The meaning of infancy.

The first scientific formulation of the meaning of infancy was made by John Fiske.[1] In his studies of evolution his attention was attracted by an interesting parallelism. As you ascend the scale of animal

[1] His discussion has been put into convenient form in one of the Riverside Educational Monographs, entitled "The Meaning of Infancy."

life from the lowest to the highest forms there appears a gradual prolongation of infancy relative to the entire span of life. Now this same ascent is marked by increasing intelligence. Thus man, who has the longest relative infancy, has also the highest measure of intelligence. Is this a merely accidental parallelism between the prolongation of infancy and increasing intelligence? Or is there some necessary connection between the two? Fiske assumes that there is a necessary connection, that prolongation of infancy in the evolution of species is responsible for the evolution of intelligence. The plasticity of infancy gave the higher animals the chance, under the protection of their parents, to adjust themselves to the environment in the light of their own experience. Any spark of intelligence that appeared could be utilized and become a factor in the survival of those who exercised it. Hence, by a law of natural selection, intelligence was favored in the evolution of the higher species. Social and ethical evolution, according to Fiske, were also bound up with the gradual prolongation of infancy. It can readily be seen that where the young are helpless and dependent for a long time, the mother becomes firmly bound to the young, and there is a tendency for the father to become necessary to the protection and support of mother and children. Thus the family tie becomes fixed. This broadens out into the wider

blood ties of the tribe and the clan, out of which have sprung the characteristic institutions of government. Furthermore, it is in the bosom of the family that the great fundamental human virtues are cradled. The courage of the father and the industry of the mother are put to the test. The helplessness of the infant calls forth sympathy and protective care. Loyalty and chivalry come to have a real value and significance in the life of men. Patriotism is an extension of family loyalty to the larger social group.

Infancy and educability.

Mr. Fiske's discussion of the meaning of infancy leaves in the minds of some the impression that the prolongation of infancy is the cause of the higher intelligence of man. It would be more correct to think of the plasticity of infancy as a condition favorable to the exercise of intelligence. It removes the limitations of fixed hereditary modes of behavior and makes possible wider variation of activity. Consequently more can be learned in experience and better adjustment can be made to the actual conditions of life. Animals among whom larger brain development accompanied the prolongation of infancy would have an advantage in the struggle for existence, hence, in the evolution of the higher animals a premium is put on the evolution and use of intelligence. In the life

of the individual, the plasticity of infancy lies at the basis of educability. The human being is educable in a sense of the word that does not apply to the lower animals, and he is educable for a longer period of time. The plasticity of infancy is related to education in a twofold way, contributing both to the conservative and to the progressive function of education.

The conservative function of infancy. — Progress is conditioned by the possibility of maintaining the results of achievement. Our civilization rests back upon the achievements of thousands of generations. What one generation learns is, or may be, passed on to the next generation. This is not true of the lower animals. If the robins learn anything in their own lives, little, if anything, is passed on. Each generation of robins starts at the beginning instead of where the previous generation left off. The larger plasticity of human beings and the prolongation of the period of their learning makes possible the assimilation by one generation of the achievements of their elders. This is of great advantage to them. They can enter upon the period of independent adult life at a higher level of adjustment to their environment. Because they have incorporated into their own lives the experience of the race, they make fewer mistakes and a much larger number of individuals are conserved, fewer being lost in the struggle for existence. For society also the pro-

longation of infancy has a conservative value. The plasticity of the young makes it possible for them to adopt, adapt, and maintain whatever society has achieved that is worth their while. Thus social values of all sorts are passed on and conserved from one age to another, and the level of civilization is maintained.

The progressive function of infancy. — Plasticity is at the basis of spontaneity, originality, and initiative. Plastic individuals do not have to follow in the groove of instinct and are not tied down to natural or even social heredity. Through variation of responses and through experimentation, new and more advantageous methods of procedure are discovered. Men reconstruct and control the environment in meeting their needs. Improvement, or progress, occurs during the lifetime of the individual. Society as a whole profits by the innovations of individuals. In so far as they meet needs, they are adopted by others. Social progress results, and each new generation may surpass the former.

The value of social prolongation of infancy through schooling.

The period of infancy, in the scientific sense of the word, lasts through the entire period of growth. In our ordinary conceptions, this means with boys until the age of twenty-one and with girls until eighteen.

As a matter of fact, growth is not complete for several years later. In the actual practice among primitive people, however, the young are thrown fully upon their own resources at the age of twelve or fourteen. Under simple conditions of life, this is possible. But it is hardly possible under modern social conditions for children to become independent at such an early age. The period of helplessness and dependence has been prolonged in the evolution of modern society. Those who are to follow skilled trades and the learned professions cannot become socially independent until some time between the ages of eighteen and twenty-five. And in the unskilled trades, there is very little demand for boys under sixteen except in what are known as the "blind alley" jobs. If the longer period of human infancy is a significant factor in the superior intelligence and the higher adjustment of man as compared with the rest of the animals, it ought to follow that the fuller use of the period of dependence for educative purposes is in the interest of the race. In a sense of the word, those who are thrown upon their own resources at fourteen, as compared with those whose plasticity is utilized for educative purposes until they are eighteen, are likely to be arrested in their development. Is it right to run the risk of arrested development in the case of any individual? Can society afford to permit this arrest of development for the sake of the

added gain in the number of years of productive labor? Is not this gain in the number of years of productive labor at the expense of higher achievement and a higher type of life? If it is true that distinctively human traits which have made for civilization are developing most rapidly in the adolescent period, then the high school and college period of education contributes most fully to the development of the social, moral, and religious qualities that are most significant for mankind. Society cannot afford to sacrifice these plastic years for purposes of gain. Too early specialization may result in permanent arrest at a lower level when a higher level was possible. We cannot afford arrested development in the moral, social, and religious nature. It is fortunate that the trend of education is more and more in the direction of a longer period of schooling for all, a more complete utilization of the period of plasticity for the higher interests of the individual and of society.

Stages of Development

One of the most striking contributions of modern scientific child study has been to destroy utterly the tendency to think of children as miniature adults. That they are radically different from adults qualitatively as well as quantitatively has been completely demonstrated. It is not our purpose here to go into

all the scientific details. One illustration will serve to make the point stand out. If the baby could grow up to maturity and still maintain the same proportions of parts, his head would be twice the normal size, his body would be longer than that of the normal adult and characterized by a large and protruding abdomen, and his legs would be so short as to give a toddling effect which in an adult would be ludicrous. For one such adult specimen a good circus manager would be willing to pay a fortune. Just as striking variations from the adult norm are to be found in the chemical composition of the bones and of the blood and the relative sizes of the vital organs. The mental and moral life of the child also is just as little that of the adult smalled down.

While the child is radically different from the adult, it must also be remembered that he grows continuously toward maturity; there is no sharp break in the transition at any point. For our convenience in understanding children of different ages, we divide the entire period of growth and development into stages, marking them off from one another by the most striking outstanding physical and mental changes that are taking place. By different specialists these stages have been given different names. In view of the fact that the terminology is so varied, while the periods correspond roughly to certain well-recognized pedagogical divisions,

I shall use in this discussion the pedagogical divisions in the hope that all readers may be able to follow the main points with equal ease regardless of any preceding terminology with which they may be familiar. Thus we may speak of the following stages of development: the pre-school age, the kindergarten-primary age, the period of the middle grades, the high school age.

Fundamental principles of interpretation.

In studying the characteristics of the different stages of development, we need some general principle of interpretation. Otherwise we shall be tempted to pile up an indiscriminate mass of interesting facts without being able to see what may be their significance. The best way to judge of the value and the meaning of the facts and phenomena of child life is to keep in mind the principle of function. We must gather and interpret our data with reference to their bearing on the problem of *growing individual control and the progress of social adjustment.* — In connection with this central problem, we need to understand particularly two fundamental laws of the child's psycho-motor life: the law of diffusion and the law of the motor flow of consciousness.

The law of diffusion. — The structure and interrelationship of neurons, or nerve cells, is such that theoretically it is possible for a nervous impulse originating in a stimulus at any point in the organism to spread

everywhere, reaching all the muscles and glands of the body. Experiments in the psychological laboratory confirm this inference. But complete or equal diffusion is rare. The tendency is checked by the existence of preferred pathways of discharge of nervous impulses that have been determined by heredity or by habit. Connections of neurons are established in advance for reflex and instinctive acts, and we organize in the course of experience other modes of behavior called habitual. But with the child the hereditary tendencies to action are less specific than in the case of the other animals, and he does less on the basis of habit than in the case of the grown man. The original tendency to diffusion is very strong with little children. They are very markedly subject to the tendency to multiple response. The baby attracted by a bright or moving object does not merely reach for it, but wiggles all over. The child struggling to write for the first time, and for a considerable time afterward, tends not only to make the relevant and irrelevant hand movements but also to twist and turn with the body, to swing the legs, to screw up the mouth, and to squint with the eyes. All his activity has a larger variability, randomness, and spontaneity than that of the adult.

The law of motor flow of consciousness. — All the sensations, percepts, and images of the little child are markedly subject to the law of motor flow. It has

been experimentally demonstrated that in adult life all consciousness is motor, that every movement of consciousness, from the lowest sensory level to the highest thought level and from the simplest experience of feeling to the strongest of emotions, drains out into motor channels that affect external behavior or inner bodily processes such as the beating of the heart, breathing, and the secretion of the glands. But, in the case of adults many of the motor processes, particularly those relating to overt action, are held in check by competing or countervailing ideational tendencies. With the little child the various types of inhibitions, of checks and restraints, have not been developed. Hence, his conscious processes follow more completely the law of motor flow. He twists and turns and jiggles upon the slightest stimulus, suggestion, or idea. He won't stand still while he is being dressed, or even while you are putting on his hat or his mitten. Something attracts his attention or some idea occurs to him and at once he starts without waiting for you to finish what you are doing for him or saying to him. He is not to blame for this, however annoying it may be; he is simply made that way, and would be abnormal if he could exercise the control of an adult. Motor and mental control are things that have to be acquired. Education must understand the process of their growth and be able to assist children to acquire the power of

concentration upon ends and to attain the orderly control of motor and mental processes which are essential to their efficient achievement.

The Pre-School Age

This is a period of beginnings. The child is largely concerned with the mastery of the fundamental physical coördinations and the control of the primary sense-perception process. The larger muscular coördinations are brought under control, including those of creeping and walking, of reaching and grasping, and of talking.

Objects have a twofold interest to the little child; they are of interest to him as centers of physical reaction and as the sources of new sensations. Upon them he can exercise his growing powers of physical activity and manipulation. They are things to be pushed, pulled, and thrown. But these activities have at the first very little of definite aim; they are indulged in for the sake of the pleasurable exercise of his growing power of control. Objects have also an immediate value as the instruments through which interesting new sensations are secured. They are manipulated largely for the enjoyment of the tactual, visual, auditory, and muscular sensations which they yield. Paper is torn not only for the sake of the pleasure of manipulation but also for the noise which it makes; in like manner the rattle, clash, and bang of

dishes thrown to the floor is satisfying. Things are put into the mouth not only in response to the instinct to eat but also to get the new and interesting touch sensations, and a lot of the fooling with things which children get into their hands has its motive in the pleasure of the new sensory experiences. A large part of the play of little children finds its impetus and its satisfaction in the joy in physical activity for its own sake and in the natural love of new sensations.

But, in spite of the large tendency to diffusion of nervous energy and the large sway of the law of motor flow of consciousness, it must not be forgotten that even little children manifest considerable persistence and concentration upon that which rests back strongly upon an instinctive basis and which carries large satisfaction. And it is as unfair to them to interrupt their activities abruptly and arbitrarily as it is for some one to do the same thing with you.

Through his varied activities, even the little child is getting the meaning of the familiar things of his environment, including persons, and is learning how to respond to them advantageously. But the mental life of the child in this period goes beyond the sense-perception level. Out of the background of the rich and full sensori-motor experience, the function of imagination begins to appear and becomes especially significant in the next period. Also many of the simple elements of

social adjustment, particularly in the home circle, are brought under control before the age of entering school.

The Kindergarten-Primary Age

The kindergarten-primary period includes the two kindergarten years and the first two or three grades. It corresponds roughly to the period in child life from four years of age to seven or eight. While the primary child is more mature than the kindergarten tot, nevertheless the changes that are taking place in the younger child do not culminate until well into the primary period. For this reason it is better to think of this span of four or five years as one period, rather than as two. There would be a great gain in clearness of interpretation, continuity of instruction, and educational efficiency if the kindergarten and the primary grades could be organized into one administrative and supervisory group.

Outstanding characteristics.

For the sake of clearness, it is necessary in a brief account to focus attention rather sharply on a few outstanding characteristics. The whole period is one of very significant transitions in development. What is said about the characteristics of the period draws attention primarily to something that is at or near its

height, and it must be corrected by thinking of development as more or less continuous.

Physical development.

In this period the child comes into rather free and flexible control of the larger, simpler, and more fundamental muscular coördinations which he used clumsily and crudely in the earlier period. He perfects himself in reaching and grasping, in walking and running, and in the control of his vocal organs. At the same time he has to acquire control of the finer, more complex, and skilled muscular activities. At the beginning of the period he has a good deal of difficulty with such processes as buttoning his clothes, lacing and tying his shoes, putting on his mittens and rubbers, and in many of the rhythmic exercises in marching and dancing. His use of the pencil and brush results in the crudest of scrawls. Cutting with scissors is a difficult problem of manipulation. In all constructive work he fumbles and blunders and is lacking in accuracy. His activities are highly spontaneous. The law of multiple response to stimuli prevails, and there is much of trial and error in his methods of procedure. While he makes progress during this period in the control of the finer and more finished muscular activities that lie at the basis of skill, it will be remembered that the whole period is one of great plasticity and we must not force the transition to

highly skilled activities too rapidly. There is bound to be much of crudity in the muscular control of little children at the end of the second or third grade.

Mental development.

The most marked mental characteristic of this period is the rapid development of the imagination. This is not a separate line of development; it goes hand in hand with the more active sensory and motor life. Wider associations of objects and their uses are built up, and the significance of things is more clearly seen. The mind is capable of reading more meaning into what is seen, heard, and felt. The whole mental life is enriched and expanded. The activity of imagination grows out of this enriched experience and in turn plays back upon it and illuminates it. This is the golden era of the child's spontaneous imagination. It transforms everything that he does. His curiosity is quickened through the outreach of the mind for the wider relationships of things. It is transformed from the sensory level to the ideational stage. This is reflected in the eager questioning of the child, which goes beyond what is given to the senses and wants to know what is coming next? what is this for? where are you going? what for? and a host of other things the answers to which are not apparent to the senses. Imitation is transformed from the physiological and sensori-motor

type to the dramatic form. Ideas which appeal are carried out into action. The activities of the environment are suggestive, they stimulate images, and these images are reproduced in dramatic form. Play is transformed and becomes dramatic in character. While highly spontaneous still, it has the spontaneity of the rapidly fluctuating imagination. Physical activity is still enjoyed for its own sake, but more for the satisfaction of the active imagination. The physical object is no longer of interest merely as a center of reaction and as a source of new sensations. It is reduced to a subsidiary position; it becomes the medium through which interesting images are expressed, objectified, made vivid, and enjoyed again. The chair is not something to be pushed about for the mere pleasure of physical control; it has become a train of cars, a delivery wagon, a fire engine, or something else for which the child has a vivid image that is pressing for release.

The activity of the imagination widens the field of control. The mind reaches out actively to enrich and correlate experience. The present moment and what it brings cease to be isolated. The mind can link it to the past and anticipate its significance to the future. Present situations become a part of a larger complex through their associations with things remote in time and space. Mental control replaces or directs physical control. This is well illustrated in the child's

play. Time and space become soluble, action is not tied down to the dot of here and now. The fact that the fire engine passed an hour ago, vomiting smoke and flame and making a most exciting din, does not remove it from the sphere of the child's present interests and activities. In play he can bring it back; he can clothe the chair which is at hand with all the interesting characteristics of the fascinating engine. In imaginative play everything in heaven above and in the earth below is brought under the mental control of the child. He is monarch of all he surveys, time and space fix no bounds to his empire. There is nothing which he cannot have if he will — drums, soldiers, stores, engines, and the wild animals of desert and jungle. There is nothing that he may not be from the coal man to the king. Everything yields to his control. The world is free and plastic, to be molded to his will. In his imagination and dramatic play he can satisfy to the full his natural impulse for power and control.

But it must not be thought that fanciful and dramatic control is all that is yielded by the growth of imagination. Normally every psychic function plays some part in practical adjustment. Imagination is no exception to the rule. Images become the symbols of realities existent or possible. In meeting practical situations the mind can work first with the symbols of things and acts and thus project in advance of overt

action ends and the processes by which they shall be reached. We learn to think a thing through in advance, or partially in advance, of behavior. The experimentation is done in a sort of mental shorthand. When the mode of procedure is perfected, we direct action in a straight course to its goal. From the age of two years on, the little child can do something of this sort in simple situations involving familiar objects and familiar acts. With the rapid development of imagination in the kindergarten-primary age, the range of the child's mental control over practical situations is rapidly extended. But it is hindered in its full realization by certain characteristics of the image that will later be discussed, particularly its spontaneous and motor nature.

Social development.

On the social side, this is the period in which the child gets control of the fundamentals of social adjustment. In his wider contact with children and adults in the school and the neighborhood, the basic things in manners, morals, ideals, and the forms of speech are assimilated and put to use in the control of his own behavior. Hence there is very great importance to be attached to an enriched and vital social life in the school. The school that meets the needs of this stage of development must certainly be a real world of social

relationships, a place where children live with other children as well as a place where they receive instruction. And it must reflect in a dramatic way the interests and activities of the real world in so far as they touch the lives of children. That has been one of the most significant things about the kindergarten, and the primary grades have become infected with the same spirit and point of view. The enrichment and development of social experience is a very important task. If this whole period of four or five years could come under one unifying control, much more could be done in the way of this fundamental social training of children.

Individuality and personality.

This whole period of the child's life is marked by great freedom, spontaneity, and impulsiveness. The inner life of thought and feeling flows naturally out into action with little constraint. The child is frank and innocent and trustful. His natural credulity and ignorance on the one hand and his natural spontaneity on the other make him very suggestible. He can be turned easily from one state of feeling or emotion to another, or from one line of action to another. His will is likely to be fluctuating and unstable; but in the line of his instincts and most absorbing interests he is likely to display considerable concentration and

tenacity. This should be respected and guided as the basis of training in work and conscious effort and will. With the growth of control over the more complex muscular activities, his power to achieve is widened in range. When to this is added the growing power to direct his activities by images or ideas, he comes to feel his own power and to realize himself as a cause, a center of power on his own account. This new consciousness of power is enjoyable, perhaps as subtle and far-reaching a source of satisfaction as it is to the normal adult. It is not to be wondered at if he sometimes exaggerates it to get the heightened effect which comes from the setting of his own will up against that of others. The development of a certain amount of aggressiveness and self-assertion is normal to this period and is a sign of progress in self-control and social adjustment. At the same time, the consciousness of self at this time is pretty largely objective; the focus of the child's attention and interest is outward rather than inward. He uses ideas but is not necessarily conscious of them; his interest is in things and acts.

Principles of interpretation of the child's imagination.

Conformity to the law of motor flow. — The whole mental life of the child of this period is markedly subject to the law of motor flow of consciousness. This accounts for his spontaneity and irrepressibility. He

is highly suggestible — all sorts of sensory experience, what he sees and hears, seem to operate as cues of action. His attention is mobile and fluctuating, caught first by one thing then another. His images seem to be merely transition points in a sensori-motor circuit. To have an image or an idea is to act. It is something on the go. It is not held back and checked up by considerations of outcome or consequences. It lacks the constraint and orderly control of the adult mental process. This is seen in the infinite variety and fluctuation of his play corresponding to the rapid shifting of imagery and interests. There is a strong tendency in such school exercises as drawing and construction work not to wait for completed directions but to plunge in and do something at once, to express the first image that arises in response to the words or the acts of the teacher. In dramatization and other forms of school work the same principle applies.

Image and reality not sharply distinguished. — One of the most immediate consequences of the motor nature of the child's imagery is his failure to distinguish between the image and the reality for which it stands. He tends to act upon his image at once. The more interesting it is the stronger the motor pressure for expression. He doesn't question its validity, he lets it go. This is well seen in the child's early drawings. Their crudity and lack of conformity to reality doesn't

bother him at all. He is very naïve in the matter. He undertakes with equal readiness to draw birds, animals, machinery, landscapes — a few scratches of the pencil or crayon and the magic is accomplished. I watched a boy of pre-kindergarten age draw an "electricity factory," then lightning striking it, and upon suggestion he didn't hesitate to draw the thunder too! He was all excitement, aflame with the idea, and never raised any question of possibility or impossibility. The pressure of the idea had to be released in crayon and in talk. The child who is asked to draw the picture of an apple with a stick thrust through it makes the stick show full length, instead of the two ends which are actually visible. He is not bothered by the fact that the picture of the man standing beside the house is taller than the house, or that the furniture shows right through the walls. His images are vague and fleeting; movement, go, expression is the main thing. It is the image that is interesting, the fact is subordinate. This is seen in the tendency for him to tell as true things which have only occurred to his mind. With us, the two orders of experience, psychical and objective, must match; and if they do not we suspect that the psychical experience is untrue or unreal. We have learned to set a different value upon images that can be checked up by objective tests and those which cannot. To the child the main thing is

their vivid and interesting character. Why is it any worse to tell about the interesting thing that occurred in imagination than to talk about that which was actually seen and heard? The value of the image to him consists in the fact that it is interesting or exciting, that is the measure of its reality. Hence it is no lie for him to utter or express that which as a matter of fact is "only in his mind." When his imagery becomes more definite with the progress of experience, and when he has gained the power to hold the motor tendency of the idea in check, this difficulty will vanish of its own accord.

Image and act not sharply differentiated. — With the little child under the stress of the motor tendency of his ideas, there is no sharp distinction between the image and the act. They are parts of one continuous organic process; the image is the beginning of a process of which the act is the end. It all tends to be what we call play, interesting for its own sake. The entire process of activity hasn't been analyzed into a series of steps, with a definite and clear-cut end to which all else is subordinated. In the attempt to control increasingly complex practical and constructive situations, the conditions force the growth of such distinctions between image and act, between process and product, or between means and end. That is one of the great values of practical projects of a simple sort

in the development of the imagination. Because of the small symbolic character of the image, the child's thinking in this period is not reflective, but rather an organization of ideas or suggestions that feels right in the light of previous experience. If this experience has been rich and varied, thinking is apt to be successful within simple situations involving little that is strange and unusual.

Widening and unifying of experience. — Through the function of imagination the child is reaching out for a wider and more unified experience. The mind leaps backward and forward from that which is given to sense to that which is not. The given element tends to restore either an original or a fanciful whole of which it is a part. Where there are gaps in experience, the mind is restless and ill at ease until they are bridged with fact or with fancy. This partially explains the active exploration, investigation, and the persistent questioning of the child of this period. It is what makes the myth and the story meet a real psychical need.

"The nature myth appeals to the child, as to the primitive man, largely for the reason that the interpretation which it gives of the facts of nature brings them within the world of his experience and makes more intelligible to him the sun, the moon, the stars, wind, thunder, lightning, the echo, etc. In the myth

they cease to confront him in all their mysterious isolation and out-there-ness. Through his imagination they have been brought into his experience and have been made emotionally congruent with the other facts of his experience. By means of the myth gaps in the imagination, as it seeks to grasp related facts as one whole, are filled; and the tension of mind due to these gaps is relieved. Take for example the experience of the primitive man with the sun. He sees it rise in the east and set in the west. It then vanishes from his view, reappearing in the east the following morning. But the imagination is not satisfied with this break, or gap, in the experience; the mind seeks to fill it in. The formation of the myth that the sun is carried around the rim of the disk-shaped earth in a boat from the west to the east fills in that gap and gives unity to the otherwise isolated facts of experience. The myth serves the same function for the child as for the primitive man. Through its agency discordant elements of nature are woven together into a system, and a fundamental impulse toward unity is satisfied. This unity may dissolve again at various points and have to be reconstructed, but it is nevertheless significant that a system of relations has been set up at all. The existence of such systems of relationships, crude and even erroneous though they may be, is a necessary prelude to the emergence and development

of the thinking process. Thinking does not in the first place set up relationships, but it works within a system to define and reconstruct and make explicit relationships within that system and to take advantage of them in consciously determining modes of action in problematic situations." [1]

Fairy stories bring things together in fanciful unities that are emotionally satisfying. Hero stories give organizations of experience analogous to those of real life and illustrate the virtues in a setting of concrete relationships. Stories of plant and animal life bring together from a wide range of sense-perception, experience involving wide gaps of time and space, many facts into one meaningful and satisfying whole. From the point of view of meeting the insistent needs of this period for the organization of experience no teaching instrument is superior to the story. This, of course, presupposes a background of actual experience with people and with the facts of nature enriched and developed to the point that organization of some sort performs a satisfying function.

Unity of the child's experience unreflective. — It must be remembered that the organizations of the child's experience do not at first represent reflective unities, or the products of scientific thinking. The great mobility of the imagination leaves little room for the

[1] Quoted from "The Psychology of Thinking," pp. 178–179.

reflective element. Reflection involves stopping to examine, evaluate, and judge. With the child the sequence of ideas is determined by felt relationships or felt relevances rather than by processes of intellectual judgment. Whatever there is of organization is the unity of the emotional rather than the reflective whole. The bonds of connection are those which feel congruous or satisfy the interests of the child's limited personal experience. The child of kindergarten age is not troubled by a collection of things that includes pretty leaves, pictures, nails, round smooth stones, bits of glass, and other miscellaneous objects. They belong together because they are interesting and satisfying to him. Much the same principle applies to all his mental unities, and it takes a long process of growth and development to reach the point of caring for reflective and logical organizations of facts. When we try to give to the ideas of the child of this period a finished scientific form we do violence to the plastic, spontaneous, and emotional nature of his imagination. This should not mean, however, that fictitious things are to be preferred to those which are real and true. The real and the true in nature and in life may have a personal value to the child and a warmth of interest just as strong as the fanciful and the fictitious. Hero stories and nature study meet his needs side by side with myths and fairy stories.

Kindergarten-primary period as a transition age.

Our whole discussion of this period has tended to emphasize the fact that it is the era of greatest physical and mental spontaneity in the life of the child. But this spontaneity is not a fixed and final characteristic. There is significant progress made in the direction of higher types of control. Transitions are under way. The most significant of these transitions are the following: from the crude and clumsy in physical reaction to the fairly well-controlled and skillful; from the fluid, mobile, and fanciful type of imagery to that which is more practical and relevant; from the reign of the senses and immediate experience to the golden era of curiosity, imagination, and dramatization; from the highly suggestible and spontaneous type of individuality to the more stable and assertive type; from the narrow social relationships of the home to the sphere of widening social and moral reactions. In meeting the needs of this period, of course it is necessary to understand the mobility and spontaneity of the entire life of the child. But it is also necessary to keep in mind the line of development and progress, in order that the activities of the child may be guided into the most fruitful channels.

Dominant point of view in instruction.

The ideal of instruction for this period is that of the growth and enrichment of experience through the pupil's own immediate activities physical and mental. In the enriched experience of this plastic age are to be found the roots of all further knowledge, skills, aptitudes, traits of character, dispositions, interests, and ideals. Hence we must extend the number and the range of kindergarten and primary activities and materials. His experience should include an acquaintance with such fundamental materials as earth, fiber, fabric, wood, and metal; with fundamental tools and their uses — knives, scissors, saws, and other cutting tools, hammer, screwdriver, auger, and the various simpler carrying, prying, and lifting tools; with fundamental processes of the life of the home and the neighborhood; with the fundamental social relationships of the home, the school, the playground, the church, and the community; with the fundamental ideals of the rights and obligations of persons, of unselfishness, kindliness, service, etc. Utilize his curiosity, imagination, and love of the story and the picture to quicken the outreach of his mind and to supplement his familiar experience. Enrich his moral and religious life with everything appropriate to his age rather than teach forms, symbols, and creeds. Cultivate his spon-

taneous feelings, attitudes, and impulses toward the good, the beautiful, and the true until they become inherent and the trend of his life is set in these directions. Give abundant experience in self-expression — in play, dramatization, drawing, paper cutting, pasting of pictures, rhythmic exercises, singing, and the various forms of constructive work with the hands.

In construction, drawing, music, reading, and writing, let the emphasis be put on self-expression and the satisfaction of the child's natural impulses rather than on the finished products. Get children to love what they are doing, to really live in the school and its activities. This is the big thing in the kindergarten and primary grades as compared with skill or the objective worth of the product that is produced. It is not the time for great stress upon technique. The story and the zest of its pursuit is more important at the beginning than phonics; drawing and the delight in the creative and expressive powers transcends in value the ability to make straight lines or lifelike reproductions of external realities. Neither motor nor mental processes are sufficiently developed and brought under control to justify strong pressure on the child for fine, detailed, and exact work. This does not mean that all sorts of crudities are to be tolerated permanently in the progress of children through these years, but rather that the emphasis shall be kept constantly on

function, self-expression, enrichment of experience, and that the technical elements shall be brought in gradually as it becomes evident that the child needs them as means for improving his growing powers of understanding and appreciating finished products.

Outside of the constructive activities, the story, with its appeal to the imagination, is the fundamental teaching instrument. The moral and social value of stories does not consist in the use of them as a basis for a series of homilies or as a means of moralizing, but rather in whatever they have of truths and of ideals that are vital and palpitating with spirit, life, and emotion. On account of the mobility of the child's attention and the unreflective character of his thought, the same theme must be approached from a variety of directions if it is to get its full grip upon the life of the child. Stories to be effective, either in the impressing of ideals or of fundamental facts of nature and of life, need to be carefully grouped about a central theme, so that the impression is renewed and impressed repeatedly.

In the disciplinary control of the child of this age, the principle of suggestion is fundamental. He is exceedingly responsive. The attention may stray easily, at the same time it is easily caught again. He is naturally trustful and wishes to be liked. The teacher should call forth his faith and confidence, lead and

inspire, rather than drive by authority and force. Discipline of little children is almost wholly a matter of conducting the work in such a way as to make repeated appeals to attention, not requests or demands for attention.

Period of the Middle Grades

This period includes the work of the school from the third or fourth grade to the sixth inclusive. It approximates the span of life between the ages of eight and twelve years. It differs most markedly from the preceding period in the more thoroughgoing organization, consolidation, development, and control of the mental and motor processes that were plastic, mobile, and spontaneous in the earlier years.

Outstanding characteristics.

Physical growth is slower in this period than in the preceding one. The finer muscular processes are brought under control, and a high degree of muscular skill becomes possible. By the end of the period the average boy has become expert in running, climbing, wrestling, swimming, skating, and bicycle riding. His hands are apt in the control of tools and materials of construction. He is in fact a most marvelously alert, agile, and active animal. His physical perfection and bodily control in many ways surpass those of the

adult, the difference being one of strength and endurance rather than a matter of skill in the use of his bodily powers.

In this period there is marked growth in mental control. The imagination loses something of its fanciful and spontaneous character and becomes the instrument of control over action. The power and range of practical thinking is extended, and less dependence is placed upon impulsive and random modes of behavior in securing one's ends.

The social nature develops along interesting lines in this period. Toward the end of the period, we find marked interest in the gang and the clique. Boys tend to congregate and to carry out together all sorts of athletic and practical enterprises. Girls form into cliques, in which the bonds of association are very narrow and exclusive. The influence upon the social and moral life of children of this period is often determined more by their gang and clique life than by parents and teachers. Hence the educational importance of parent and teacher getting into the gang and giving it direction.

Nature of the child's imagery in this period, principles of interpretation.

In the preceding period, the imagination was mobile, fluid, and spontaneous. The motor flow of imagination

was so rapid that it lacked control. In this period, the power develops to hold the image in check to some extent. Hence it becomes possible to distinguish more adequately between the image and the reality for which it stands. The two can be compared and checked up with reference to one another. If the image is inadequate, time can be taken to define it and make it accurate. This means that it will be a better mental tool. Put in other terms, the image becomes the symbol of a reality which exists or may exist; it is not merely a tendency to act. It comes to stand for, or signify, something else. It has its value in relation to the things for which it stands and not merely in itself. With growth in the symbolic function of the image, it becomes possible to distinguish more clearly between the means and the end of action, or between processes and the products which result from them, or between causes and their effects. Images can be held back long enough to be examined, to be judged, and to be correlated with one another within a series of suggestions or ideas. Hence action can be planned in advance — ends projected and the means be determined by which they shall be realized.

But it must be remembered that in this period imagination tends to work within limited situations capable of being grasped in concrete terms, or in the terms of that which is relatively familiar and relevant to the

child's interests. There is less power of dealing with wide generalizations or with abstract principles than in the case of the adult. This may be due largely to the more immediate character of the child's interests. It must not be supposed that the child of this period has no power to generalize or to think in abstract terms. But the direction and range of this power is more limited than it is at a later age.

Some applications and interpretations.

Attention to technique. — This is a period in which more attention can be paid to the technique of processes that result in skill of action and in the production of finished products, both practical and mental. The child now has both the motor and the mental basis for this. In writing, drawing, and manual training, increasing emphasis can be placed upon the excellence of the product. The more refined and complex motor coördinations are being perfected which make this physically possible; and the imagination is growing in the direction of greater definiteness and accuracy as well as in the power of correlating images into series symbolic of the relationships that exist between means and ends. The development in imagination also makes it possible to lay stress upon the technique of reading, language, and geography to a larger extent. These elements of technique become

significant to the mind that has developed to the point of feeling their relevancy, hence the teaching of them becomes functional. For this reason the formal processes involved in memorizing and drill have a larger justification now than in the kindergarten-primary period. They can be related to larger ends the realization of which is impossible without these exercises.

Training in thinking. — With the rapid growth in the power to distinguish between means and ends, we should expect a corresponding rapid expansion in the field of the child's thinking. What can the school do to minister to the need of this age in this respect, and how can it do it? Here I can do no better than to quote a passage from my "Psychology of Thinking." "If the child is to be trained to think he must be given opportunity to consciously adjust means to ends. But the emphasis must fall upon those types of situation in which the ends are *results that are quite definitely related to processes from which they spring.* All the manual training and industrial activities are from this point of view especially valuable as furnishing the right sort of problems. In geography there is opportunity to emphasize valleys, rivers, mountains, cities, etc., as the outgrowths of certain processes. They are results, definite and concrete, of activities which are perfectly relevant and comparatively easy of comprehension because of their

concreteness. A valley, for example, may quite easily be seen to be the result of certain processes. It has an explanation. The child can see even now that erosion is going on at some points and deposits of soil at others. In the light of certain present concrete causes and conditions he can work out the process by which the valley came to be what it is now. In doing this, he is mentally adjusting means to ends, but this he is doing *within a particular concrete whole.* But in doing this repeatedly with many concrete wholes, *he is forming a habit of looking upon things as explainable by reference to principles.* Thus he will ultimately come to the appreciation of principles and laws themselves. In nature study also, it is easy to correlate cause and effect in a multitude of simple situations. In history this is a little more difficult, requiring more effort of the imagination, but here much can certainly be done in the way of cultivating the habit of thinking of the institutions and modes of life with which we are familiar as the outcome of certain preceding processes. *The child is more interested in seeing relations within a particular whole than in seeing broad and sweeping generalizations. His training in thinking should begin with a pretty concrete consciousness of results and the means to secure them, from which should be gradually developed a more generalized sense of the relation between means and ends.* This would culminate in the formu-

lation of rules rather than principles. The child may understand the 'how' if not the 'why.' I say *understand*, not merely *know*. *Understanding* the 'how' implies a consciousness of the relation between the means and the end within a particular whole, at least; *knowing* the 'how' may be a purely blind process, which is from the child's point of view wholly arbitrary." [1] The point of view for the training of thinking in this period might be stated as that of the project and the problem, and so far as problems are used those which grow rather directly out of projects.[2]

Transformation and development of natural impulses.— All forms of instinctive action are transformed in this period from the more spontaneous to the more controlled type. Play activities get organized into games. Curiosity functions at a higher intellectual level. Construction becomes purposeful and intentional to a larger degree. The social impulse ceases to be merely a gregarious tendency; the spirit of loyalty is developed in the gang and in the clique. The tendency to collect is turned into definite channels — collections of stamps, coins, picture post cards, birds' eggs, minerals, etc. Teaching that is to meet the needs of life in this period must recognize that the mental level is higher than

[1] "Psychology of Thinking," pp. 183–184.

[2] The method of the project and the problem is discussed later in detail. See p. 247 ff.

that of the kindergarten period and yet has not reached the scientific level. In utilizing the natural impulses, they must be satisfied at this higher level in which the organizing and outreaching powers of mind are developing rapidly.

The child's will.—The growth of will is coördinate with the development of muscular control and the use of the image as a tool of mental control. It requires both for efficient expression of the will. But control of action by means of ideas in this period is something that operates within the field of rather narrow and immediate interests and relationships. Strong persistency of effort is correlated with undertakings in which there is something which is felt to be relevant or of personal concern. Will is practical. It must be trained in practical situations which call for the mental element. Ideals and their expression must be closely correlated. The emotional element of will must be emphasized. Training in ideals must come through a study of their concrete working in real life. In this way they become intelligible and also tend to gather into themselves the feeling element which makes them dynamic.

Personality of the child.—The personality of the child grows in stability in this period. He becomes less suggestible and imitative. Spontaneity gives way to control. There is greater tenacity of will because

there is greater understanding of ends and the means of their realization. Work is correspondingly more possible. The child in this period is not fully socialized. His attitude is not selfish, but it is ego-centric and objective. He takes for granted what is done for him in the home, he does not feel responsibility strongly. It would be abnormal for him to do so, as he is still in the natural period of dependence on others in all the bigger things of life. His social nature is broadening through nature's device of the gang and the clique. Here he first learns what voluntary loyalty means, and he enters into the larger human inheritance of social coöperation.

Dominant point of view in instruction.

Instruction in this period should continue the enrichment of experience through many forms of direct contact, observation, and participation, and also through the use of the constructive imagination in bringing clearly before the mind things learned through telling or reading. It is the time to emphasize more than in the preceding period the processes of memorizing, drill, habituation, control of technique which result in higher skill and more thorough consolidation of mental and motor powers. Control of the symbols of the fundamental types of knowledge should be acquired, but always in close relationship to their

meanings. It is a period of mastery of the finer muscular processes; and this, taken together with the development of symbolism in imagination, makes it possible to throw larger stress upon finished products of drawing, constructive work, and of thinking. The teacher should make these grades a period for the exercise of much practical thinking, using projects and problems rather than scientifically organized matter. It is the time for organizing the larger unities, or systems, of experience in terms of the relationship of facts to one another; but principles should first be seen in their setting in concrete situations. This is the period of hero worship, when interest in biography and epic story runs high and should be utilized as a means of inculcating ideals and of socializing the attitude. With the larger distinction between means and ends, work and study become differentiated from play, and the school ought to train the pupil to study by making him conscious of ends to be achieved and interesting him in the worth of these ends and the processes by which they can be achieved. Rules, regulations, and tasks should be rationalized in the sense that they are neither arbitrary on the one hand nor related merely to original instinctive tendencies on the other. The beginning should be made in this period of the transfer of authority from external power to inner sense of relevancy. School discipline would

come largely through this transfer of authority to the self who is responsible for his action and also from the direction of activities in channels of vital and practical interest to the pupil.

The High School Age

If we accept the growing tendency to adopt the junior high school organization, then the entire high school period covers six years of work beginning with the seventh grade. This six year period is divided into two parts of three years each, called respectively the junior high school and the senior high school. Where children progress regularly through the grades with little or no retardation, the span of life included in the entire high school period extends from twelve or thirteen years of age to seventeen or eighteen inclusive.

In the growth and development of pupils in this period, the characteristics which differentiate them from those in the elementary school all center in the onset and development of adolescence. The transition to adolescence is made by different individuals at widely different ages, running all the way from 11 to 16 in girls and from 12 to 17 in boys. But the vast majority of both boys and girls have crossed the threshold of sex maturity before the close of the junior high school. After this threshold has been crossed, the rate of maturing varies greatly among individuals,

but the most significant phenomena of adolescence are likely to extend well into or through the senior high school period, and complete growth and development is not attained for several years after that.

On account of the wide variability in the time at which adolescence begins, the junior high school finds as one of its most peculiar problems the necessity of dealing with pupils in the same classes some of whom are little fellows while others are big fellows. The two groups may be of equal ability, but they are bound to differ widely in their personal, mental, and social interests and attitudes. The little fellows would have to be interpreted in the light of the principles already discussed for children of the fifth and sixth grades. Our discussion of the high school age at this point applies, then, not to those who are pre-adolescent but to those only who are entering upon the adolescent period or who are already adolescent. The emphasis will fall very largely upon those characteristics which mark the earlier stages of adolescence, which are likely to mark the lives of the great majority of pupils in the latter part of the junior high school and the earlier part of the senior high school.

Outstanding facts of early adolescence.

The dominant characteristics of early adolescence are rapid physical growth, expanding intellect, quick-

ened emotional life, appreciation of the relation of the individual to society, and a deepening moral and spiritual nature. Physical growth is very rapid at the beginning of adolescence. Particularly is this true of height. Extreme cases have been known of increase in height of twelve or thirteen inches in a single year. But this is very unusual. Growth in weight lags behind increase in height; it is slower and continues for several years after growth in height has slowed down or ceased. There are marked inequalities of growth in this period. Bones may grow faster than muscles, and the various parts and organs of the body do not all increase in size at the same rate. Girls attain their height earlier than boys and for a time surpass boys of the same age in height and weight. Later the boys shoot up and become ultimately taller and heavier on the average than girls. Along with the maturing of the sex impulse goes a broadening of the social impulse. There is a growing sense of one's place in the social order of the adult world and an expanding interest in all that pertains to it. The mental life is apt to have a wider outreach and to become conscious of its own power. All the new interests and outlooks of the period intensify and quicken the emotional life. It is a well-established fact that the religious consciousness becomes sensitive in this period and young people are highly responsive to moral

and religious appeals. Personal and social idealism run high and the permanent moral and religious attitudes are likely to be fixed in early adolescence, though they may later change their intellectual forms. Like the period of the kindergarten-primary child, this is an age of marked transitions. There is large plasticity and spontaneity of the mental, moral, and social life. There is high suggestibility and a wide range of fluctuation of moods, interests, and attitudes. Personality is in a period of reconstruction. In all things there is a forward movement toward the stability of thought, emotion, will, and conduct characteristic of the adult. In the account which follows, this must be kept in mind. Naturally emphasis will be put on the transitional features, and the reader must check up the account by keeping continually in mind that no one individual will manifest all the qualities and characteristics discussed and that many of them are exceedingly transitory in others.

New problems.

Problem of physical and physiological readjustment. — The rapid growth of the organism makes necessary widespread muscular and functional readjustment. In the preceding period the child has gained a high degree of physical control and muscular dexterity. His habits and skills were adapted to the size and strength of his

body. The sudden new access of bulk disorganized his old habits of motor adjustment. He has to use a taller body, longer legs, longer arms, and bigger hands and feet in doing the same things. It is like putting into the hands of the mechanic trained in the use of tools of a particular size, shape, and weight a kit of tools which differ in all these respects. He is bound to make many mistakes and to be clumsy for a time. For the early adolescent, going through a doorway, sitting down in a chair, or picking up a pin is a different process from what it was a short time before.

It requires a different coördination of motor and sensory processes. The ordinary relationships have been disturbed, and a new adjustment has to be effected before skill is attained. It is no wonder that he becomes awkward, self-conscious, and bashful for a time. In the performance of its inner functions also the body has to accommodate itself to changes in blood pressure and to many inequalities of normal function incident to inequalities of growth of parts and organs.

It follows from the facts of physical change that physical education must be cautious about putting undue strain upon the plastic parts of the body or unduly specializing their activities during the period of rapid growth. It is worse for a boy to carry the one-sided burden of the postman than it is for a man. Occupations in mines and factories which call for the same

bodily posture for long periods of time are likely to result in more serious malformations than in the case of adults. Highly specialized physical education may put undue emphasis on muscular feats or muscular development at the expense of vital organs. The whole body should be given a chance to attain proper equilibrium.

Normally the period of rapid growth is one of abounding energy, vitality, and power to resist disease. There is a heightened sense of vitality, with corresponding exuberance of spirits. Life seems worth while, and there is strong physical enthusiasm. On the whole the period is one in which there should be plenty of work and of play to utilize the abounding energy of youth. At the same time, there should be an avoidance of undue tension, strain, or overwork. The results of a breakdown in this period are likely to be more far-reaching than with those who are mature. When there is anything abnormal in development, this may become a very critical period for health. Serious complications in nervous and physiological readjustments may arise. This is intensified by any irregularities in sex development. Hence, with some this age is one marked by physical and nervous lassitude and mental depression. Parents and teachers should be on the alert for cases of this sort, and special care and consideration should be given to those who find the

period of change physically disturbed and critical. Better a year out of school than permanent weakness. Where withdrawal from school is not necessary, some special attention may be given to the regulation of hours of work, recreation, and rest.

Problem of social readjustment. — The emergence of the sex instinct emphasizes two things very strongly. One of these is that the individual is approaching the period of maturity and independence, the other is the intensification of the social consciousness. With the attainment of normal height, boys and girls feel distinctly grown up. Childhood retreats rapidly into the past and maturity comes on wings. The sense of independence naturally is accentuated by the transition, and there is a corresponding demand to be treated as men and women. With this comes a larger reliance on one's own judgment and a strong tendency to react against external parental or social control. A new consciousness of self appears and the sense of personality is heightened. Hence young people should be given a larger measure of freedom in this period; but past training ought not to be lost. The larger freedom, under proper direction, would result in the confirmation in the life and thought of the individual of all that was best in his previous training and the use of it on his own responsibility. Parental and school discipline has to be exercised from a different angle. Young people

must be controlled through their expanding sense of honor, responsibility, and integrity. They can be reached through sympathy and friendship better than through external control. The wise parent or teacher will prepare in advance for this transition by establishing bonds of friendship and loyalty which will enable him to maintain his leadership on the new basis when the time comes to make the transition from authority to freedom.

The maturation of the sex instinct intensifies the social consciousness. The racial factor asserts itself, and the individual is identified with the past and with the future of the race. He becomes a member of society in a new sense. This is recognized among primitive peoples by the rites of initiation into the tribe. The social impulse is quickened also by the situation which confronts the maturing youth. As he approaches man's estate, he stands on the threshold of a larger world of human affairs in which he feels that he is soon to play a part. Unreflectively he is seeking his social adjustment. By a natural law of suggestion which makes us more sensitive to those things which are relevant to our needs, his interests in the world of human affairs widen and deepen. This world of human affairs upon the threshold of which he stands is full of activities which beckon to him. What part shall he play? He becomes sensitive and responsive to its

varying problems and interests. Politics, fashion, social reform, world problems, literature, industry—all take on new meaning and significance. He is filled with the spirit of idealism and social enthusiasm. His untried powers long for a worthy field of action, and he has not yet been buffeted by the hostile forces of the world enough to know his weakness and limitations; all things are possible. He admires the men who have achieved; he is a natural hero-worshipper. But hero-worship is transformed from admiration for physical prowess into admiration for those who render great service. It is the social hero who begins to attract. In the preadolescent stage, Lincoln might have been admired for his rugged outstanding personal qualities; in this era he is admired as the man of vision, the man who championed a great cause and became a martyr in the hour of his victory. The social consciousness broadens until loyalty to the gang is replaced by the larger social loyalty. The gang must be representative or typical of some cause that is worth while if it is to be justified. It must embody some ideal. Responsiveness to ideals is now at its height. These ideals as embodied in some concrete life meet his needs as he gropes for the underlying principles of worthy behavior. The problem of social readjustment is simplified by the fact that ideals suggest right ends of conduct and the right methods of attaining them.

Problem of mental readjustment. — On the side of the feelings, rapid growth brings with it normally a sense of exhilaration. There is an increase of energy and a quickening of the tide of life. This has as its natural accompaniment greater enthusiasm, effervescence, optimism, joy in life. There is a heightened demand for pleasure, recreation, and self-expression. The so-called criminal tendencies which some writers find characteristic of early adolescence are not at bottom criminal at all; they are simply the expression of this overflowing vitality finding expression in all sorts of pranks. Oftentimes the social environment is repressive and lacking in facilities for the normal expression of the exuberance of spirits of young people. Then activities are likely to take forbidden forms, to become antisocial, and to drift into criminal directions. This is a development that can be prevented by a larger social provision for youthful recreation and pleasure. Home, school, church, and community must do their part in guiding and directing the energy of youth into wholesome channels. It is not sufficient to condemn evil; substitutes must be provided that will give normal and legitimate exercise to the instincts that tend under other circumstances to go wrong.

When adolescent development is for any reason abnormal or disturbed, then the feeling-life will be lacking in the buoyancy of which we have been speaking.

There is likely to be great lassitude, morbidness, moodiness, and an unwholesome attitude of introspection. Youth under these circumstances has to be dealt with very carefully and sympathetically. But even in normal adolescents there are likely to be contradictions and rapid changes in moods, attitudes, and behavior. These probably have a physical basis in the functional disturbances and fluctuations incident to inequalities of growth and development. They may be due to oscillation between tendencies and habits of childhood that persist and the new tendencies that are not yet thoroughly established. At one moment the youth acts like a child while claiming the right to be treated like an adult, or he is angered because we treat him like a child when he feels like an adult. His personality is not consolidated on the new adult basis; there is conflict and tension between the old attitudes, feelings, and interests and those which are developing and leading toward adult standards and ideals. This explains a large part of the so-called "storm and stress" of adolescence.

Parents and teachers should anticipate the needs of this transition period and tactfully assist boys and girls to make the new adjustments the pressure of which they often feel without knowing just what is the matter and how to meet it. Instead of making foolish jokes about beaux and sweethearts, discerning

parents will anticipate the needs of this age for the companionship of the opposite sex and provide for it in normal and wholesome ways. They will not violate the growing consciousness of big boys and girls by keeping them unduly long in styles of dress suited to the little fellows. They will recognize the growing sense of independence by giving their children something to say about what they wear instead of always selecting and buying everything for them. They will have anticipated the coming of adult self-respect by training their children in advance in the independent use of money. Teachers and parents will meet the needs of the transition period for recognition of approaching maturity by taking young people more fully into their counsel in matters of the home and the school that concern them. A large part of the awkwardness, self-consciousness, and petty willfulness of this period can be relieved of its distressing emotional consequences by tactful treatment which quietly and unostentatiously meets the needs of changing life as they arise.

Intellectual readjustment is bound up with all the processes of growth and development. The approach of maturity has tended to emphasize both the consciousness of individuality and the sense of the social nature. To be an individual one must rely on his own judgment. Consequently the adolescent must come to know what he himself thinks, believes, and stands

for. This necessitates a new reflectiveness. He must not merely rely on tradition and authority but assume responsibility for his own life. His social development emphasizes the intellectual impulse from another angle. To play his part in the larger world of social activities and interests, the youth must come to grips with first principles. Without fundamental principles the whole social environment is too complex to understand. He is feeling for his adjustment to life, but how shall he understand life and deal successfully with it? Anything that helps to organize, explain, and unify now has tremendous functional significance for him. Hence he is interested in the fundamental principles of science, politics, religion, morals, and vocation. His intellectual life deepens and widens. He tends to put what he has previously learned into thought relations of his own. He gets interested in the reflective processes and what they yield. This sometimes results in an opinionativeness and an argumentativeness that is ridiculous if not positively offensive. However, this is only a natural exaggeration of a new virtue. The final outcome should be a larger and more wholesome reliance on his own judgment, an internalizing of the principles of conduct and of life that have been hitherto in large part external acquisitions. If rightly guided and directed the new reflective interest leads to the higher life of reason and of science. And so there is a larger justi-

fication in this period for emphasis on the scientific relationships of facts to one another in an organized system of knowledge.

Reconstruction of will and personality.—With the quickening of new interests and the projection of new vital ideals, the motives of will are tremendously strengthened. With the growing consciousness of maturity and independence, the will becomes more aggressive and assertive. With added thought power, action can be guided by ideas and made more clear-cut, definite, and purposeful. Added self-reliance is a normal expression of the consciousness of growing powers. But it must be remembered that the youth of this period is still highly suggestible. He is going through a transition period and is sensitive to everything that may have meaning or significance for him in making the new adjustments. While thought and judgment are gaining power, it is still true that there is much spontaneity and impulsiveness; and there are conflicting tendencies at work in his life that often produce vacillation of will. Interests and emotions shift rapidly from one thing to another and conduct often shows surprising contrarieties. Personality is not completely formed, it is still in a plastic state. It is moving in the direction of a larger relationship of the self to the social whole. With the growing social consciousness, there becomes possible much of altruism

and also much of selfishness. Personality is less objective and more subjective. Egotism when present is a more conscious egotism; while altruism is more or less instinctive and emotional. The problem of relating the two in an indissoluble whole has not yet been solved at this age. That is usually an achievement of a more stable period of development such as middle or later adolescence.

Educational significance of this period.

The high school period is one of such tremendous plasticity that its educational significance can hardly be overestimated. In a sense of the word adolescence is a new infancy, giving every one that enters into it a new chance. The narrower inheritance of the home and the neighborhood is being widened and transcended; the individual is coming into his broader racial and social inheritance. In this period he is responsive to the higher impulses that have lifted man so far above the animal level and have given us our social, moral, and religious ideals. No matter how limited may have been the home opportunities of the pupil, in this period his whole life may be transformed through his larger sensitivity and responsiveness to the higher social values. It is in this period of plasticity and high social suggestibility that foreign-born children are most rapidly Americanized.

Where the home training in morals and religion has been of the wisest and most tactful sort, the ideals of youth have already been set in the direction of the higher values. In this case, the transition from preceptual and authoritative acceptance of the higher ideals to the inner and personal recognition of their claim upon life and behavior may be effected with little or no emotional disturbance. Where the home training has not been good, and bad habits of thought and of action have been built up, the period of responsiveness to the higher ideals may result in conflict between the new and the old and become indeed a period of moral, intellectual, and religious "storm and stress." In religion, conversion in such cases is likely to manifest all the traditional marks of emotional upheaval. Much the same sort of experience may be gone through in the transformation of the moral life outside of the church. In fact, there are many kinds of conversion besides that which is called religious that may take place in this period. They may occur with much "storm and stress" of the emotions or they may be like the opening of the bud to the sunshine when the right stage of development is reached. We do not know the depths of the soul of any one of our pupils, we do not know how or when the appeal of the good, the beautiful, and the true may strike home. We do know that new tendencies of life assert themselves in this

period and that any pupil is likely to respond to them if the conditions are at all favorable. The unambitious may unexpectedly become ambitious, the shirker may see new light and begin to work, the "bad" boy may find himself responding to some new social impulse that transforms his life. We have no right to pass final judgment on any pupil in any phase of his life until he has passed completely through the period of adolescence. We can never tell to what new influence he may respond. Our attitude must be that "all things are possible." Every pupil must be given his chance to make the transition into the higher social, intellectual, and moral life.

In view of the significance of the period of adolescence in making transitions of life involved in responding to the new tendencies that assert themselves in this period, we ought to be very insistent that the whole period should be utilized as fully as possible for educative purposes. Schooling should be prolonged, the child kept under favorable influences throughout the plastic period. It is the higher nature particularly that is at stake in this period. We ought to run no risks of arrested development. From the point of view of the higher life there is tremendous social waste involved in using up boys and girls in the economic process, instead of giving them the larger training for citizenship and vocational service.

Dominant point of view in instruction.

This period is, like that of the kindergarten-primary age, one of great sensitivity, spontaneity, and suggestibility, but at a higher and more social level. It must be kept in mind that it is a transition period, with all the reconstructions of life that are involved. Individual differences among pupils are more striking than at any other time, and the differences between two years in the life of the same person may be very marked. Hence it is necessary to cultivate a sympathetic insight into the needs of the individual, and to vary class procedure with reference to individual needs much more than in the period of the fifth and sixth grades.

As a period of marked plasticity and rapid transition of interests, much attention must be paid to the enrichment of experience. The mind is reaching out very actively in new directions, and new needs are multiplying which crave for immediate satisfaction more than they do for the technique of organization. Make instruction in this period, if ever at any time, illuminating and inspirational as opposed to factual and didactic. Young people are reaching out for a larger understanding of the world in which they live, but not wholly in the spirit of science; they want to know what it has of meaning and significance for them,

what it has to offer that can satisfy the surge of their new interests and feelings. They are looking out upon the world as a place in which they are to play a part, in which they are to achieve great things and realize themselves. The problems of life have a new interest. Let literature, history, and all the humanities be taught in such a way as to function in the life of the adolescent. Let the pupils satisfy their interest in the great problems of life rather than learn a mere catalogue of critical facts. Science also illuminates the mysteries of life and of industrial progress. Let these young people feel something of its meaning and significance to the world as well as master a certain number of logically arranged experiments. It is the human interest that is the big thing in the school work of the adolescent.

While making a large place for the human interest in whatever is taught, — whether literature, history, mathematics, or science, — we must at the same time recognize the growing intellectual powers. With the increased interest in generalization and the illuminating and interpretative function of laws and principles, it should be the task of instruction to begin the rationalization of nature and of life. Facts should be seen in ever wider relationships and some intimation should be gotten of nature as a system. With the growing power of reason, that which has hitherto been preceptual and authoritative should be more fully rationalized.

The customs, conventions, and ideals of the moral life should be seen in the light of the interests that they serve in the larger social whole. And religion, accepted hitherto as a matter of family and community tradition, should be seen as a reasonable thing and its demands as not resting upon some arbitrary obligation. In other words, the moral and religious life should be internalized and made personal, a matter of one's own grateful and willing choice because of their relevancy to the meeting of fundamental needs. So, with all the institutions of society, something of their rationale should be seen. They may have grown up in an unreflective process of social evolution; but nevertheless they are adapted to some extent to the meeting of fundamental needs of society. This rationalization of life and of nature needs to go hand in hand with the active outreach of mind and heart for new experience; it will give balance and poise to the rapidly shifting subjective life of the adolescent, but should not be carried so far as to become a lifeless systematization of scientific material before those specialized interests have developed which make the technical organization of science a matter of concern.

The pupil at this age wants to see the relevancy of what he studies to life — his own or that of society. He is feeling for his adjustment, groping toward it rather blindly, and he is interested in everything that throws

light upon the interests and activities of men, the joys, the problems, and the sorrows of life. He needs to feel himself out and find what sort of being he is, he needs to test his powers and capacities and to discover his vocational aptitudes. Hence the need of an enriched curriculum and a method of instruction that brings to him rapidly and vividly the riches of experience which the various subjects of study contain. Everything should have something of the tang both of realism and of idealism and not get lost in the technicalities and symbols which delight the trained scholar.

Utilize the impulse to hero worship and the strong tendency to idealism to quicken and build up the moral life. Let literature, history, science, and biography do their part. Here can be found many impressive concrete illustrations of noble achievement and of signal service that inspire the youth to do his best. In the period of early adolescence many young people can be saved from the blind devotion to lower ideals that are so common in the practical world by which they are surrounded. In study they can get a wider outreach and vision of life and its activities, and thus they can get an enriched experience of the great values and concerns of life. The social nature which is expanding rapidly at this period must get its recognition in the work of the school. Let the pupil get a sympathetic insight into the fundamental problems of

society through concrete studies of civic, business, and humanitarian institutions. Help him to back up his idealistic social enthusiasms with enlightened conceptions. Let him see that both intelligence and moral ideals must not merely exist but actually function in the reconstruction and regeneration of society. Perhaps no period in the whole school life of the child is so fraught with high possibilities in the permanent trend that can be given to the life of the spirit — the moral, æsthetic, social, and intellectual interests.

Summary

Modern thought attaches positive value to childhood. Childhood is not merely a preparatory stage; it is a period having rights and needs of its own and to be lived fully and richly. The home and the school must meet the needs of child life at every stage. The curriculum is not the center about which everything else revolves, neither is the child such a center. Both have to be taken into account in the educative process. While respecting the nature and rights of the child and seeking to meet actual and present needs, the materials and subject matter of education must be so selected and organized as to insure increasing socialization of the individual.

Infancy, while a handicap at the beginning, is a great gain in the end. Prolongation of infancy has carried in its train the higher intelligence of man and the evolution of society and morals. The period of plasticity is one of educability, and it is important that it should be utilized more fully for schooling as the problem of adjustment to the modern world increases in complexity and difficulty.

The needs of children change with growth and development. To understand them aright and meet them properly, we have to know what is most significant in each period of the child's life. The characteristic changes that take place may best be interpreted if we employ the functional principle of relation to growth in individual control and in social adjustment. We need also to remember that both physical and mental activity are determined by the law of diffusion and that all conscious processes are subject to the law of motor flow. Hence there is larger spontaneity and lack of restraint in children than in adults.

The pre-school period is one of growth in control of crude muscular coördinations, fundamental sense-perception processes, and the simplest social relations.

The kindergarten-primary period is marked by fuller and freer use of the larger muscular coördinations and the beginning of control of the more delicate and skilled activities. Imagination develops rapidly, giving dramatic character to play and construction and strong interest in stories. This makes possible a wider, richer, and more unified experience, but thought processes are more or less spontaneous and emotional rather than reflective and controlled. Instruction should stress function rather than technique, enrichment of experience rather than acquisition of symbols. Yet the needs of self-expression should expand sufficiently in this period to make necessary the beginning of control of the symbols of reading, writing, number, and drawing. Personality is highly spontaneous and suggestible, but individuality, aggressiveness, and self-assertion indicate growth of will. The simple and fundamental social adjustments that lie at the basis of all future conduct should be grounded in this period.

The period of the middle grades is one of growth in control of skilled motor processes and of the more practical control of the imagination as exhibited in the ability to distinguish more clearly between means and ends of action and to diminish spontaneity in favor of order and organization. Enrichment of experience

should still be emphasized in instruction, but memorizing, drill, and the mastery of symbols and technique may be increasingly stressed. Thinking goes on best in limited concrete situations, and the method of projects and problems is likely to be best suited to this age. The social life is marked by the gang and the clique, a strong tendency to hero worship, and a new sense of honor which develops out of the gang life.

During the junior and senior high school period the primary adolescent changes take place. The physical, mental, and social life is reconstructed to conform ultimately to the adult type. Body and mind are highly plastic for a time, and pupils are highly responsive to suggestion and responsive to new ideas, customs, and ideals, especially as these reflect the larger social environment, Instruction should be illuminating and inspirational, tending to meet the rapidly developing needs of adolescents for a larger understanding of the higher things of life and helping them to find their adjustment to the world in which they are soon to play a part. Because of the larger maturity of thought, increasing attention should be given to the rationalization of science, conduct, and the social attitude. Idealism and hero worship are strong tendencies and should be utilized to make personal and social the moral and religious life. Adolescence means a new chance for every person, and schooling should utilize the period more fully for the interests of the higher life of the individual and of society.

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CHAPTER IV

THE CURRICULUM

Where does the subject matter of education come from? How does it develop? What light does its origin throw on its nature and function? Do the various classes of knowledge alone constitute the curriculum? or do we teach other things? What is the functional interpretation of the curriculum? Why, from the functional point of view, can the curriculum not be regarded as fixed and final? What is the relation of the teacher to the curriculum? what the relation of the pupil? By what tests shall the value of subject matter be judged? What is meant by the liberal element in the curriculum? what by the vocational? Are they mutually exclusive? Can the curriculum be utilized as an aid in vocational selection and guidance? How shall it be administered to avoid "blind alley" forms of education?

Origin and Nature of the Subject Matter of Education

The subject matter of education is not a body of material purposely invented for school use or to accomplish certain disciplinary effects. It is rather something that has evolved in the process of human

experience and has been selected and perpetuated because of its value in meeting needs.

Primitive subject matter.

This may be illustrated in a simple case of primitive life, such as that of the American Indian. Among other things, the Indian needed food. He found certain supplies of food in the animal life of forest and plain. Because of his interest in them as sources of supply for food, not to mention other interests, the habits, dispositions, physical strength and endurance of the animals became a matter of concern to him. He had to know all that he could about them. And what he found out was so valuable in his hunting and fishing and trapping that he passed this knowledge on to his companions and his children. The virtues of courage, endurance, and patience were essential to the success of his hunting and fighting; so he came naturally to magnify these qualities, to try to realize them in his own life, and to inculcate them in his children. Skill in the use of weapons — precision of aim, quickness and force of thrust were so important that he could not fail to learn their value and try to attain them. Under very simple conditions of life there was little occasion to teach such things as these. The motives for learning them were very close to the lives of all. The opportunity to learn

them through direct participation and imitation was ever present. Nevertheless there was a very vital educative process going on, and there was a very definite and specific content of education. The subject matter of the education of the Indians was the kind of knowledge, habits, skills, and ideals that had value to them in meeting the needs of their lives as individuals and as members of the tribe. In so far as there was any such thing as education in science and religion, its subject matter also arose within the experience of the group and was strictly relevant to the meeting of their needs in understanding the mysteries of the world in which they lived and in controlling their behavior aright with reference to them.

Development of subject matter.

As with the Indian and other primitive people, so it is with every stage in the evolution of civilization. There is a body of subject matter of education that grows up within the experience of the group and is very intimately related to their life activities. So long as the conditions of life are simple, this body of subject matter does not get differentiated out clearly as something to be organized into a curriculum to be followed in teaching the young. It is not necessary to do this; the conditions of life itself furnish both the motivation for learning and the agencies through

which learning takes place. Yet, even at a comparatively early stage of social progress there is likely to appear over and above the subject matter that is easily learned in daily intercourse, also a body of traditional material preserved in story, song, and ritual that receives specific attention, and care is taken to see that it is transmitted either to all or to a special social class. This is all material that has, or did have in the beginning, some significance to the tribe. It was originally selected with reference to specific needs — the stimulation of courage in youth through the portrayal of the deeds of the fathers, the preservation of secrets of medicine, the tribal customs of marriage, the rites and ceremonies of religion designed to honor ancestors and to placate hostile spirits.

With progress in civilization to higher levels, such as those of Mesopotamia, Egypt, China, Phœnicia, etc., the arts of life and scientific interests developed to the point that there were considerable bodies of knowledge, of special techniques and skills, and of ideals of individual and social life. The subject matter that met the needs of these civilizations was more extensive, more specialized, and less likely to be learned by all the people without special agencies for its propagation. In most cases, the attempt was made only to preserve the more specialized types of knowledge by small groups of those specially initiated into the secrets of wisdom.

But the principle we are illustrating is the same — the subject matter of education originates within the experience of the group, meeting needs that are real to that group. Hence we expect it to be different in certain respects for the various types of civilization. No subject matter is educative, from this point of view, unless it is relevant to the evolving experience of the individuals concerned. It must function in experience to produce some change that will add to the power to meet the needs of life.

Subject matter of education not confined to knowledge.

We have gone far enough with the analysis of the origin and nature of the curriculum to see that the elements that get incorporation into the subject matter of education are those which have specific value for life under the conditions that prevail at any given time or in any special organization of society. If this is a correct interpretation, then it has a very important bearing on our conception of the content and the function of the curriculum. We are altogether too prone to think of the subject matter of education wholly in terms of certain bodies of knowledge to be taught to children. But the values of life that every age and every nation have sought to perpetuate and to pass on to the rising generation include *much more than specific bodies of fact. They include certain skills,*

habits, virtues, and ideals. These are as important to individual and social welfare as the knowledge of arithmetic, geography, grammar, and other subjects that we emphasize so strongly. Skill of the hand in writing, in drawing, in the manipulation of tools and materials, and skill in the control of certain standard mental processes are essential to the man who is to face the conditions of the modern world with confidence. There are right habits of speech — clear articulation, modulation of the voice, etc. — that make a vast difference in certain situations in life. Teachers should make it their business to teach these things as well as to teach the recognition of words in the reader. There are habits of personal bearing, of promptness, of neatness, of accuracy, etc., that have a definite social value. The virtues of courage, of patience, of persistence, of regard for the rights of others, of obedience, of self-reliance are all things to be inculcated. They belong in the curriculum of instruction whether specified or not. So it is with the great ideals, such as those of religious toleration, freedom of thought, democracy, individual rights, social justice, etc. These ideals have not been attained without bloody struggle in the past. It would be a crime against posterity to let them disintegrate and die out. They represent fundamental social values of greater importance than the knowledge of a vocation or the preservation of any specific

kind of knowledge. They must be viewed as things to be reproduced through education in the lives of children. Closely related to ideals, and not easily distinguished from them, are attitudes and sentiments, such as reverence for age and for authority, sympathy for the needy, the suffering, and the wronged, sentiments of patriotism and of international brotherhood.

Perhaps some would call these things educational aims or educational values, rather than definite portions of the subject matter of education. But there is a decided advantage in thinking of them also as belonging in the curriculun of the school; for they are much more likely to get the attention that they deserve. We tend to think of the curriculum too much in terms of examinable results that can be determined by written tests. With the development of experimental pedagogy, tests for the measurement of progress in the mastery of certain skills, habits, and special techniques have tended to throw emphasis upon these as things to be striven for, as parts of the curriculum as truly as bodies of fact. This is good as far as it goes. But we need a much more comprehensive conception still of the content of education — one that will include all the classes of values the attainment of which makes better men and women. The lines drawn between aims, values, and subject matter may be useful for the purpose of our thinking; but, in the

process of teaching, these things all merge into one another until from the functional point of view there is no psychological distinction between them. In a given life situation, or class of situations, the inculcation of an ideal or a sentiment may meet the need just as truly as in a set of constructive activities the knowledge of the table of linear measure will meet the need of that situation. The inculcation of the ideal may not be accomplished by the same methods of instruction, perhaps we cannot apply the word "teach" to it at all; but the ideal is just as truly a part of the subject matter of education as the facts of arithmetic. If it is not so conceived, it is altogether too likely to get lost in a wraithlike fringe, and responsibility for its inculcation will sit very lightly upon the entire teaching and supervisory staff of the school.

Functional Interpretation of the Curriculum

Subject matter to meet needs of life.

Our discussion of the origin and nature of the curriculum implies that subject matter is functional. It represents selection of values — knowledge, skills, ideals — on the basis of their relevancy, or worth, to the individual and to the group. There is no absolute standard for the content of the curriculum. In the primitive era, the knowledge of woodcraft

and the habits of wild animals, together with skill in fishing, hunting, and trapping, were very important to the life of the tribe. To-day they have little value except in isolated communities living under pioneer conditions. Even the pioneer virtues inherent in physical courage have given way largely to the ideals of law. In the Middle Ages, the arts of war and the ideals of chivalry were the big things in the lives of the knights; scholarship, theology, and religion were the things of supreme concern to the clergy and the learned class; and the secrets of craftsmanship and of business were perpetuated and propagated among the industrial and commercial classes of the free cities. In each social group the things that were explicitly taught or unconsciously assimilated were those which were of most value to them. The three medieval classes, though contemporary, had radically different educational ideals and practices because their respective methods of life called for radically different bodies of subject matter. Thus we have the education of chivalry for the knights and nobility, the seven liberal arts and theology for the clergy and scholars, and the guild and burgher schools for the craftsmen and merchants.

Another illustration of this functional principle of selection and adaptation of subject matter is seen in the history of Latin as a subject of study. In the early

Middle Ages, Latin had no value for either knights or craftsmen. In the unsettled social conditions that prevailed, it could not function in their lives. The problems which confronted them had to be met through means to which Latin made little or no contribution. But, with improved social conditions, making for wider social intercourse in the later Middle Ages, we find the need of Latin becoming more pressing. The nobility studied it because of its value for wider political and diplomatic intercourse, and the craftsmen and merchants because it was necessary in their widening business relationships. As the universal language of religion, law, diplomacy, literature, and scholarship, it inevitably became the central subject of study in the schools of the later Middle Ages. It was a necessity of life rather than of mental discipline. The Renaissance, with its fuller discovery of the glorious past of Greece and Rome, and its quickening of the human interests and imagination, focused attention still more strongly upon the Latin language. This was both natural and legitimate. The Greek and Latin classics met a need of the humanistic awakening that no other body of subject matter could do so well. It was for their inherent value that they were first studied and not for some mystical conception of their disciplinary value. They had a social content superior to that of any other literature of that time and conse-

quently most useful for that stage of social and intellectual progress. They were for the people of the early Renaissance functional to the core. If we follow the law of changing social conditions in its effect upon the curriculum, we shall expect the position of Latin in the curriculum to change with the change in its possible social function. Long since, it has ceased to be the universal language of religion, it has been superseded in diplomacy and international usage by French and English, and in scholarship and literature the native tongues of the great nations have assumed first place. With the decline in the social function of Latin in the real world of human interest and human activities, its value as subject matter of education has likewise declined. This is reflected in the relatively larger prominence in thought and practice given in our schools to the mother tongue, the sciences, history, and modern literature, — subjects which reflect more fully the interests and activities of the world of today. Whether Latin still has a value that justifies any place for it in the curriculum is a question reserved for a later discussion. We have used the study of Latin at this point merely to emphasize the functional nature of subject matter and the consequent law of its adaptation to changing social conditions.

Subject matter not static.

The outcome of our discussion of the functional nature of the subject matter of education is to throw into relief another great principle, namely, that no curriculum can be a fixed, static, final thing. No man, or group of men, however learned and expert, can draw up an educational curriculum that shall be good for all times and places. With changes in social, moral, and industrial conditions, new values appear and old values disintegrate and often vanish entirely. The basis of the curriculum changes continually with the progress of society. The children of to-day need to know many things which were unknown to anybody a generation ago; they need to have certain kinds of skill and to form certain habits of life and of thought that could not have been anticipated by their fathers, and even the virtues change in their content if not in their basic principles.

What has been said about the plastic character of subject matter from the social standpoint is true of it also from the individual angle. Modern psychology and biology have recently given tremendous emphasis to the principle of individual differences. The needs of people are not all alike because their original natures are different in fundamental capacities and tendencies. The subject matter that is suited to one may not be

best suited to another. In the delicate problem of taking adequate account of the individual pupil, there is no such thing as a fixed and final body of subject matter. There has to be a great deal of selection and adjustment according to varying needs.

Danger of conceiving of the curriculum as final.

Unless we get a thoroughgoing functional conception of the curriculum, we are apt to think of it as a special construct that has been devised by wise men for disciplinary purposes, for self-development of pupils, or for special moral ends — a body of subject matter that we must accept just as it is on the authority of wise men; or we are likely to take it just as it comes to us from the tradition of the past. In either case, it will have a finality that defeats its own purposes. This has been seen in the extreme authoritative acceptance of the kindergarten curriculum of Froebel in some places. The changed social environment and the radically different home life of American children as compared with the German children whom Froebel knew did not suffice to suggest any change in kindergarten materials or methods. The same thing is seen from the traditional angle in the survival long past the period of their social value of portions of arithmetic devoted to compound interest, annual interest, etc. When subject matter lingers in the curriculum past

the period of its utility, there is a tendency to justify it on some other grounds, such as that of its disciplinary value. This is an artificial standard instead of a natural one. As soon as it is admitted as valid, there is likely to ensue a dangerous isolation of the school from the life for which it is ostensibly preparing its pupils.

According to the principles of functional psychology, we prepare best for the work of life outside of school by setting up in school those bonds of connection between situations and the appropriate responses to them which we want to continue when children leave school. This means that the subject matter of school must be identical and continuous with the subject matter of life. If we think of the curriculum as a finality, as an end in itself, we are likely to allow it to become narrow in its content, whereas life in the modern world is so many-sided as to call for the utmost possible enrichment of the subject matter of education. The curriculum ought to bring the pupil into contact with the world in which he lives at many vital points. For this reason we cannot waste time and energy on materials and values that no longer perform any useful function.

Relation of Teacher and Pupil to the Curriculum

In so far as the curriculum represents the most scientific selection of the fundamental values of civilization at any time, it furnishes the teacher with materials for use that have already been selected, evaluated, and organized. In so far as activities can be initiated and problems developed which call for this material, the teacher may know that he is on the right track. The curriculum, like a map, becomes the guide to possible experiences; also it indicates what kinds of experience are most worth while. But it does not follow that subject matter can be imposed on the unready pupil any more than that a map will have value for the untutored savage. The curriculum only suggests to the teacher material that may have value, or which may be drawn upon, in helping to meet the needs of the child. What portions of it shall be used, and in what way, remains a further problem. This has to be determined by a knowledge of the stage of development of the pupil's experience and an understanding of his needs, interests, and moving tendencies. In the hands of the teacher subject matter must be plastic, capable of being shaped freely to perform its part in meeting the specific situations that arise. As a teacher, I must know what the trend of life is in any

particular case, and I must ask the question, What have I in the way of subject matter that can be used to minister to growth? Or, what have I that will turn my pupils aside into more fruitful lines of development? In so far as the teacher can apply the principle of respecting the individuality of the particular pupil, what has been said regarding the use of subject matter for the class, or group, should be observed also in dealing with the individual.

Tests of the Value of Subject Matter

Relevancy to social and individual needs.

The principles in accordance with which the value of subject matter is to be determined are implicit in the whole trend of our previous discussion. To be admitted to the curriculum any subject must stand the test of both social and individual function. It must be material that is actually relevant to the present world, and it must be material that can and will under school conditions function in the present lives of pupils. The projects and the problems of the school must be real in two senses of the word. They must reflect the interests, problems, and values of the social environment; and they must grow out of and be relevant to the expanding experience of pupils.

Illustrations from the elementary school curriculum.

We have put reading, writing, and arithmetic into the curriculum of the elementary school because they represent fundamental activities of life in the modern world; but we have not always selected the content of these subjects with a view to meeting the real needs of children at the various stages of development. We have put geography, history, and civics into the middle and higher grades because geographic, historical, and civic knowledge have a very significant social value; but sometimes the subject matter has been selected from the adult point of view and the attempt has been made to impose it upon the pupils from without. When manual training, domestic science, music, and art claim admission to the elementary school curriculum, there is protest from those who think of education in terms of general discipline. The only reply that can be made is from the angle of their social and individual values. Do these subjects represent interests and activities that are fundamental and legitimate in modern life? Do they meet the actual needs of pupils in the growth of their experience? If so, they belong in the curriculum. Those things that are of most general and fundamental importance to society and at the same time serve to enrich the experience of all people should be required subjects in the curriculum.

But, when subjects have once been selected for a place in the curriculum, there is a still further problem. We must ask of every topic and part of the subject matter the same critical questions of value. Arithmetic belongs in the elementary school curriculum; are we sure that everything that gets into the textbooks belongs there? When we begin to ask such a question, when we begin to put every particle of subject matter in arithmetic under the searchlight of criticism, then radical reconstructions begin to take place. Topics like compound partnership, compound interest, and cube root vanish. Their value was either traditional or purely disciplinary; they could not stand the test of individual and social function.

The application of these tests means the simplification of all the elementary school subjects, a tremendous elimination of nonessentials. It means likewise a larger sense of their reality, a stronger motivation for their study, and a firmer grasp and control of fundamental values. It means a larger amount of time also for the enrichment, without overcrowding, which is required of a curriculum to meet the needs of to-day. Subject matter is less likely to be conceived in structural terms and is more likely to be thought of in terms of relevancy, use, function. Dividing lines between subjects tend to get blurred, and we think more of the various kinds of vital experiences. Consequently there is a

growing tendency to reconstruct the elementary school curriculum around a few centers of vital experience which call for the development of knowledge, skills, and ideals that are needed in the modern world, instead of starting out with a large number of different subjects which emphasize primarily certain series of fact relationships.

Illustrations from the high school curriculum.

The high school curriculum also must be subjected to criticism in the light of the same principles. No subject can claim recognition solely on the basis of authority or tradition. Not even its claim to disciplinary value will save it if it is found lacking in relationship to the activities and interests of the modern world. "By their fruits ye shall know them," whether the subject be Latin, geometry, physics, literature, or manual training. And the fruits that we demand are those that will feed us now. It is not sufficient to issue blanket claims as to their value; what we demand is a bill of particulars. We want to know precisely what they contribute to the interpretation or control of the various forces of the world in which we live.

We might take the subject of Latin again for illustrative purposes. It still occupies a very large place in the high school curriculum of the United States, particularly in the East. Does it owe this place to the force

of the inertia of tradition, or is it justified? That is a difficult question to answer. It is a more complex problem than it appears to be either to its devotees or its enemies. Its enemies are prone to dismiss the subject with a wave of the hand as one that has no practical value merely because Latin is a dead language. Its devotees are sometimes so blindly given over to the doctrine of its disciplinary value that they tolerate no suggestions as to reconstruction either of content or of method so as to make the study of real present value. Latin has a real value for the present in its relation to our own language. It is, to be sure, a language no longer spoken; but it still lives in what it has contributed to English. Let the reader look back over this printed page and he will find two or three words of Latin origin in every line. Latin, then, has some practical value in the study of our own language. Whether or not one gets a better grip on his own language through the study of Latin is largely a matter of chance, unless it is taught with this specific intention. The connections must be made; that is a part of the business of teaching. The Latin element in our vocabulary must be studied to secure the full value of Latin as a subject in the curriculum. There is probably no better place in which to come to an understanding of the ideas, or functions, of grammatical relationships than in the study of Latin. But instead

of getting this one may get simply a jargon of endings and special forms. It depends on the method of instruction and the specific intent of the teacher whether the universal ideas of grammar which lie back of all the forms are grasped and made a means of understanding English better. Possibly these language values of Latin might be realized in some other way; the fact remains, however, that they may be realized from the study of this subject, and this may justify its retention in the curriculum on an elective basis. Can we say anything for the social value of Latin? Could society get along just as well if nobody knew the Latin tongue? Certainly it cannot be maintained that it plays the same part in the life of the real world that it did when it was the universal language of religion, scholarship, law, and diplomacy. But there are certain specialized interests of society that are still served by a knowledge of Latin. Society still needs people who can maintain the continuity of knowledge between the past and the present. In many fields of historical research a knowledge of Latin is still essential. There is a social value attaching to the study of words and phrases which have their roots in the past. There are studies in the life and customs of more primitive ages that throw light upon fundamental sociological and psychological principles. The preservation of the choicest folklore, literature, and philosophy of

the ancients makes it necessary that some people be trained to keep in touch with original sources and be capable of translating from the original directly into the modern tongues. Thus Latin has a social function still; but it is a highly specialized one. It can be realized through the training of a comparatively small group who shall serve the function of experts in this field of knowledge. To secure these experts for the need of society, it is probably safe to assume that we do not need to put any special pressure upon the student body to pursue the study of Latin. An adequate number will be supplied from those who have special linguistic abilities and tastes which will lead them to elect the subject in high school and college. If any others should need this knowledge for some calling in which it still has a technical value, the chances are that they will discover this need soon enough in the course of their preparation to be able to meet it. In this respect the value of Latin is to be determined on the same basis as the value of chemistry, of Chinese, or of trigonometry. On the social side there is but one ruling principle for all the different kinds of subject matter, that is, their worth to society and the necessity of adequate provision to meet the social need.

In the case of history and civics, the same principle applies; but the need is more universal than it

is in the case of Latin or trigonometry. Intelligent citizenship is so essential to the life of a democracy that it cannot be left to the decision of the individual entirely whether he shall study the subjects that contribute to training in the ideals, principles, and virtues of citizenship. Hence these subjects become common elements in the training of all; they are made compulsory subjects in the curriculum of the elementary and high schools of the country.

Enrichment of life as a test of value.

Another test of the value of subject matter is to be found in the contribution it makes to the life of the individual. There are many things that enrich the life of the individual for which we can find little direct social value. Undoubtedly our contribution to the work of the world is affected in some way by the whole self, everything and all that we are makes a difference somewhere. In the ultimate, the health, happiness, and character of the man have social significance. At the same time, there are bodies of subject matter of education for which it would be difficult to point out in specific terms any social justification for their study on the part of any considerable number of people. It does not follow, however, that their study is not justified on the part of any who want to pursue them. Take astronomy for an illustration. How many people

need to know the facts of astronomy in order that social needs may be met, or even for practical purposes of their own? Yet all people who have the power of thought want to know something about the stars. The heavenly bodies appeal to the imagination and they challenge thought. As human beings there is satisfaction coming to us from an understanding of their mystery. What a pity it is that the natural curiosity of the child regarding them is so early side-tracked or stifled! For the child who wants to know about the stars, or the rocks, or the floating clouds the facts that we can give him regarding these things are as legitimate subject matter of education as many other classes of facts that we stress so strongly in the formal aspects of arithmetic and grammar. We do not need to worry about their social significance before we teach them. The chances are that they will have some such significance. They will lead to further questions, to the growth of scientific interest, and possibly to a more intelligent understanding of the forces of nature, the net result of which will be to destroy the power of superstition. But, without regard to this at the time, just as the scientist pursues his studies for the joy of investigating, so ought pupils to be permitted to undertake many projects and to follow up many lines of inquiry for the mere joy of achievement. Literature, art, and music all have

very great social significance; but they are also justified on the ground of the harmless enjoyment that we can get out of them. From the functional point of view, when we find subject matter that enriches the life of the individual in any legitimate respect, we do not need to go any farther for the test of its value. It has some value, it is worth while, if it meets any legitimate need of the individual. There may, of course, be the further problem of determining its relative value in comparison with other subjects.

The Liberal and the Vocational Elements in the Curriculum

The question of the specific bearing of the curriculum upon vocation does not arise until the pupil reaches the higher grades, normally at about twelve years of age. Up to that time the subject matter is selected with reference to its general social significance and its function in the enrichment of fundamental experience and the development of the pupils. Beyond the sixth grade the question of subject matter that has a bearing on vocation becomes significant. There is a strong tendency at the present time to recognize the vocational demand in the junior high school[1] and the regu-

[1] The Junior High School corresponds generally to the seventh, eighth, and ninth grades; the Senior High School to the last three years of the traditional High School course.

lar High School period. With the recent emphasis on vocational education, the whole question of the relation between the liberal and the vocational elements in the curriculum has been forced to the front. What do we mean by liberal? what by vocational? are they antagonistic to each other, or are they complementary in function?

The vocational element.

Until the modern industrial revolution, there was practically no need for the school to pay attention to vocational subject matter as such; though in a general way all secondary and college education had a vocational or prevocational trend in that it pointed toward the learned professions and public service. Before the industrial revolution, the trades and the business vocations were not so highly specialized as to prevent those interested in them from learning largely by direct methods of observation, participation, and imitation. This is no longer possible. In fact, observation of the industrial and mercantile processes is now so difficult that many young people have no idea of the vocations by which they are surrounded and the various ways in which it is possible to earn a living in their immediate environment. The school, as the instrument of society, has therefore acquired a new responsibility. It has to undertake more definitely

the task of interpreting to children the vocational interests and the vocational demands of the day. Consequently the curriculum must include more vocational subject matter than it has ever done in the past. In the lower grades we see this point of view reflected in the introduction of manual training, domestic science, gardening, etc. But this material is introduced for its general educational value rather than for any immediate vocational intent.

Beyond the sixth grade, it seems legitimate to introduce a more specific vocational content. By that time it ought to be possible to bring under control all the fundamentals of a general education—the necessary elements of reading, writing, arithmetic, language, geography, history, music, art, and a simple acquaintance with the use of the tools, materials, and processes of the elementary industries. As the great majority of children leave school at the age of fourteen, their adjustment to the world of industry by means of which they earn their own living and also serve society will be left almost wholly to chance unless they receive in school some vocational instruction. If their adjustment to the world of industry is left to chance, it has been discovered that a very large proportion of them drift into the "blind alley" occupations, and at man's estate when they should be ready to leave the juvenile occupation and earn a man's wage they are without any special equip-

ment for an adult vocation. Hence they drift in overwhelming numbers into unskilled lines of labor already overcrowded. They are apt to swell the numbers of the unemployed, incapable of meeting the needs of their own lives adequately, and tending to become unemployables and a menace to society.

This situation can be partially remedied, it is now coming to be believed, by differentiating the curriculum at the beginning of the junior high school period into several broad groups of studies, such as the manual arts group, the domestic science group, the commercial group, and the college preparatory group. It is too early at this stage to determine definitely what specific occupation the pupil shall prepare for, but he can get such an acquaintance with the fundamentals of some group of occupations that he can soon adjust himself to the work in any one of them in which he can find employment. Such a conception of the vocational element in the curriculum would properly be called prevocational. In this prevocational period, the curriculum would still have much of its general character. But the arithmetic, geography, history, and language of the commercial group, for example, would differ from the traditional curriculum in emphasizing the commercial aspect of all these subjects. The pupil would continue the common branches, but these would become business arithmetic, commercial geography, commercial and

industrial history, and business composition. In like manner, those in the college preparatory group might begin to specialize in some of the more elementary phases of high school work. Their arithmetic would take over some of the simpler elements of algebra and of concrete geometry; their language work might be continued in the form of easy Latin, French, or German.

If the pupil is to continue his education beyond the eighth grade, the vocational element in the curriculum can become more specific, if the pupil knows exactly what vocation he is to follow; or he may still continue for a time in prevocational and general lines of work, shaping his course with reference to the larger background from which he can later make a rational choice of vocation. The tendency of reconstruction of the curriculum at this point is not definitely established yet. In some cases, the vocational student will go to a separate industrial or commercial high school; in others, he will pursue a vocational course in the same high school with pupils following the traditional courses. But, however the matter is handled in any particular community, the fact is that we are moving very rapidly in the direction of a reconstruction of the curriculum that will recognize the vocational element in its prevocational, or general, aspect in the higher grades and in its more specific aspect in two-year and four-year high school courses. In addition to this,

there are developing all sorts of special trade and industrial and continuation schools, which it is not necessary to discuss in this place.

The liberal element.

With this growing emphasis on the vocational element in education, what is the significance of the liberal element? It is quite likely that we have to reconstruct to some extent our traditional notions of a liberal education before we can answer this question. There was a time when the idea of a liberal education was quite intimately associated with a particular group of studies — Latin, Greek, and mathematics. Later, the subjects of history, modern languages, English, and the natural sciences were drawn into the magic circle. What will the end be? For one thing, although it may be stating the matter dogmatically, it seems as if we should have to say that the question of whether an education is liberal or not cannot be determined by the specific subjects, or group of subjects, in the curriculum. Any subject may be liberalizing for one and technical for another, dependent in part upon the purpose of the person who studies it, the method of instruction, and the final effects produced upon the pupil. The study of Latin may be liberalizing for one and strictly technical for another; the study of agriculture may be liberalizing for the prospective journalist and technical for the

prospective farmer. It is necessary for us to look into this notion of liberal and see what we may mean by it at the present time and in a democratic social order.

Liberal as the setting free of the self.

The word liberal suggests two fundamental ideas. It is derived from a Latin word, *liber*, which means free — free not in the sense of given without cost, but free as contrasted with slave; and we derive from the same root our term liberal in the sense of broad and generous. The ancients had the conception that there was a kind of education that was especially appropriate for the free man, it was to fit him for the kind of life that a citizen, or free man, lived. In a democracy we have no slaves, all men are supposedly free. Hence the word free cannot be used in relation to a liberal education in the older sense. Yet this idea of freedom is one that is worth retaining in our conception of a liberal education. Freedom of the mind, of the spirit, of the inner capacities and powers of the individual is one of the great ends of education. The ignorant man is a slave to his environment. Only by chance processes, hit upon by trial-and-error methods, can he effect his adjustment to the forces of the world. He is tyrannized over by superstition, tradition, and prejudice. Anything in the curriculum which stimulates his intelligence, broadens his outlook, rationalizes for

him the forces of nature, quickens his insight into the social processes, widens his sympathies, heightens his ideals, puts him into more numerous and appreciative relations with his environment, and gives intelligent direction and skilled control of his activities — anything that does one or more of these things serves the function of a liberalizing element. It frees and makes effective the man within him. Whatever subject matter will do this for any one is liberalizing for him. Probably there is no one body of subject matter that will do this work adequately. But mathematics may be the central core for one, languages for another, sciences for a third, and practical arts for a fourth. The different subjects make different appeals to pupils of different capacities, powers, and temperaments. The best that there is of intelligence, of executive ability, of moral quality may be set free in different individuals by different bodies of subject matter. The liberalizing value is not in the subject matter itself but in what it does in setting free the best powers and capacities of the individual. The pupil may be a musician, a craftsman, an artist, a mathematician, a political or industrial leader in his soul; education must set those powers free. It is justified in using any materials that will perform the function.

In the modern world, it is essential to set free, among others, those powers of hand and of mind by means of

which one can earn a living. The days of picking up a living directly from the natural resources of the environment are past, also the days of aristocratic leisure based on slavery. We must secure food, clothing, shelter, and all the things that satisfy the higher needs of the self by the pursuit of some vocation. Freedom from the constraint of nature has been achieved through specialization of industry and interchange of products. It is only in this way that human beings are free as compared with animals. It is a central function of education, then, to set free the powers and capacities by means of which the individual can achieve the most for society. Only in this way can he secure most fully the things which, in turn, will satisfy his own life. Instead of there being any opposition between a liberal and a vocational education, the vocational element is from the functional point of view fundamental in all education. It is as necessary for the rich as for the poor. In a true democracy, no man has a right to live off the unearned increment. He is under obligation to render some sort of service in return for what he receives. His powers ought to be set free in the direction of positive achievement. If he cannot achieve, but only spend, he is not a free man of the modern world. In a democracy, we have a right to expect every man to count one, that is the very least. The hobo is an educational failure from one point of view, the idle rich from

another. Neither of them has realized his possibilities, or set free his powers of achievement. Somewhere in their education ideals broke down or abilities were not stimulated and developed. This is not a tirade against the rich, but an attack on the conception of education for leisure and enjoyment alone. There is no innate right to leisure and luxury that can be transmitted by heredity. Democracy means coöperation, all working together. Each must contribute something according to his native capacities and his acquired capital. The better the laborer, the mechanic, the business man, the professional man are equipped for their respective vocations, the better it is for all of us. And the better trained the rich are in the matter of ideals of responsibility to society and in the matter of the methods and processes of utilizing their wealth for the development of industry and for the great enterprises of social welfare, the larger service they are likely to render. The point is that nobody can be liberally educated for life in a democracy who is not trained to use his powers in some one of the many possible vocations to contribute to human welfare.

Liberal as the broad and generous.

The term liberal as applied to education carries with it the idea of generous and broad. A curriculum constructed strictly and narrowly with reference to the

vocational needs would be narrow and ungenerous in its provisions. The liberally educated man must be capable of reaching out beyond his own vocational activities and putting himself in touch with the world at many points. A man has a right to be something more than a cog in an industrial or professional machine, and this too even if that machine is run by the state. He is a human being, a father, a neighbor, a citizen, as well as a worker. The curriculum must be broad enough to touch every side of his life. It must include those elements which enrich life, lift it above the merely animal plane, and make it worth while. No matter what his vocation is going to be, one child has just as much inherent right as another to study those subjects which will enable him to understand the world in which he lives, to appreciate the finest and best things of our civilization, and to utilize in the midst of his vocation all the means of growth that his environment can furnish. One criticism of the disciplinary conception of education is to be found at this point. It tends to narrow the curriculum down to a few subjects of a particular kind having intellectual, and especially logical, qualities. It reaches one side of human nature too exclusively. The tendency is to despise the human interests in music, art, and poetry; and even in the so-called humanities — language, history, and literature — the element of appreciation

has been too largely subordinated to the demand of rigorous mental discipline. Not until recently have music, art, and dramatization had a recognized place in the elementary school curriculum; and even at the present time it is very difficult in most high schools and colleges to get recognition for them in the curriculum on the same basis as mathematics and languages. There still seems to be some deep-seated prejudice against them growing out of the fact that they do not yield the same examinable results that we have become accustomed to demand under the disciplinary conception of education. A truly liberal education would be broad in the sense that not only would it go beyond the demands of vocational needs but also of so-called disciplinary values. Is it not a curious commentary on our so-called liberal arts courses in colleges, leading to a Bachelor of Arts degree, that they make almost no place for the fine arts?

Relation between the vocational and the liberal elements.

From the point of view that we have developed, there is no necessary contradiction between the liberal and the vocational elements in the curriculum. Function determines whether we shall call a subject liberal or vocational. The same subject may perform both functions. Agriculture may be studied primarily with the intent to put its principles to practice; it is then

vocational. But the person who studies it may also receive a setting free of his highest powers and capacities of mind, of hand, and of heart. It may be the center from which he reaches out, with a vital interest and a growing grip, to many related subjects. If he follows it up at all closely in its ramifications, it is likely to lead him into many of the fundamental problems of biology, chemistry, and physics, as well as into the problems of finance (through marketing and banking) and of taxation. It may easily lead him out into a study of the whole social problem of the present day through the interrelations of agriculture with the industries and the lives of all the people of all parts of the nation. There is no inherent reason why it should not be as cultural, as liberalizing a study as Latin or any modern language; it may illuminate life and broaden the mind and its sympathies even more, if taught with reference to its liberalizing value. It all depends on what it actually does for the individual in setting his soul free and in expanding and enriching his life whether it is a liberal subject or not. On the other hand, it is perfectly possible that the study of Latin or of German or of mathematics may have a very limited value from the same point of view. We have all probably seen pupils of whom it could be said of their classical and mathematical studies, "They never touched him." Still others have literally trod

the heights as they reveled in the beauty of the Greek tongue, in the oratory of Cicero, or the logical perfection of a demonstration in geometry. The classics have been to many the introduction to all the beauty of literature, of art, and of philosophy. The chances are that almost any subject may become the center from which somebody will reach out with a vital interest to the larger world of which this subject reflects but a part. The more such centers of vital outreach the pupil can have the more likely is he to secure a broad and generous education. The more such centers of interest from which he will eagerly and actively test his powers the more likely is he to set those powers free and bring them under control. The curriculum should be rich and varied enough to perform both of these liberalizing functions. If the vocational subjects add further centers of liberalization they should be welcomed by the advocates of a liberal education. The more fully powers are set free and tested the more likely is the curriculum to have vocational value. So the liberalizing and the vocational functions may meet and coöperate in the same body of subject matter.

The Curriculum as a Factor in Vocational Guidance

The discovery of the fact that so many juvenile laborers get into blind alley jobs, spending the most

valuable years of their plasticity, from fourteen to eighteen, in getting nowhere vocationally, has emphasized in recent years the need of vocational guidance and vocational education. One of the best agencies for determining vocational fitness is the school curriculum, if it is rightly organized and administered. Under the old régime, not yet so very far away, it had comparatively little value in this respect because of its narrowness. It was more like a sieve which was vigorously shaken to get rid of all but one kind of grain. Those who were of an intellectual type, or of a certain intellectual type, remained in the sieve and were promoted from grade to grade and from school to school, receiving the benefits of a prolonged education. The rest could take their chances in life with the limited equipment furnished by the lower grades and the lower schools. Under this procedure there was a sort of vocational guidance, a guidance of the limited few into the learned professions and the higher technical pursuits; but little was done to discover the positive tendencies and abilities of the many and to guide them into the paths of greatest usefulness to themselves and to society. We are now beginning to see how unjust that school procedure was to the individual and how wasteful it was for society. Why cannot the many find in the test of the curriculum something positive as well as the few? They can,

if the curriculum is broad enough, rich enough, and plastic enough. There ought to be varied enough materials to test all kinds of abilities, to enable all kinds of boys and girls to find out what is the trend and character of their capacities, and to set free and train the varied powers of youth. It is often more important from this point of view to change a pupil's course of study in the middle of it, if it is not finding him, if its results are negative, than it is to insist on his continuing until graduation or complete failure simply because he started on that course. Some pupils reveal quite readily their natural abilities; in the case of others they have to be found through repeated processes of elimination, or of trial and failure. If a curriculum is rich and varied enough, usually it will not take very long to discover the trend of inclination and ability, and hence the line of training will be discovered that will lead to one group, or class, of vocations rather than another. Along with this function of discovering capacities, setting them free, and testing them, the curriculum may be used to serve another vocational function. The curriculum must reflect the interests and activities of the real world fully enough to give the pupil some idea of how he may best use his own powers in the work of life. In other words, the curriculum should be an instrument to help him find his adaptation to the world, his adjustment to

life's work. It is better that he discover his adaptation to life's work while he is still in school than to have to blunder his way into the right work after he gets out.

It might be well before leaving this subject of vocational guidance to say that it is not the function of the teacher to determine any pupil's vocation for him. Neither is it the function of any vocational counselor to do this. The teacher or the counselor can help the pupil to see in the light of his course of study what his capacities are, and he can help him to see in what sort of occupations these capacities can be utilized to advantage. Choice rests ultimately with the individual; that is the prerogative of personality, and we have no right to substitute our own personality for that of another. There are often hidden ideals and springs of conduct that will assert themselves in shaping the life of the pupil. He may be dimly conscious of these, and they may determine a wiser course of action for him than any that we can lay down. This is particularly true of any child that has not completed the period of adolescence. It is during this period that the forces of life are likely to shape themselves along the line of permanent interests.

It has already been said that we want a curriculum that will serve the function of vocational guidance and that will give sufficient vocational training to prevent young people from getting lost in "blind alley"

jobs. We might add that we want such an administration of the curriculum as will lessen the tendency to "blind alley" types of education. Where the curriculum is not conceived as fluid and flexible, it is perfectly possible to lead pupils into blind alley courses of study, courses which they may follow for several years without really getting anywhere. If they are ultimately to get somewhere they have to go clear back to the beginning and start all over. There are students who have completed a classical course that became a blind alley for them because the administration of the curriculum was so rigid that they could not make any change without losing all that they had done. In like manner there are scientific students who have been caught in the blind alley because it was not seen that they ought to change their course rather than get so little out of what they were doing. This principle is true also for vocational education. If we are not careful, we may switch pupils too soon into definite vocational grooves which prevent their ever going on to do that something more worth while that they would have undertaken if their vocational choice had been postponed. In general, the longer the pupil can be kept in the line of utilization of his plasticity for further growth and development the better. To this end the curriculum must be administered as a plastic thing which is to be adapted to the

performance of its highest educational function and not as something that marks out fixed goals and fixed pathways by which they must be reached.

Summary

The subject matter of education comes out of human experience. Knowledge, skills, and virtues that are found to meet needs of life, individual and social, are reproduced incidentally or they are taught to others intentionally. The curriculum is more than a body of knowledge; it is a selection of all the fundamental civilization values of its age. As the needs of the age change, the content of the curriculum tends to change, too. Where it does not, the traditional element comes, in time, to overbalance those phases of subject matter that are relevant to life. The curriculum should never be regarded as fixed, static, and final; it should always be subject to revision and reconstruction.

To the teacher the curriculum is a guide to those things which have been adjudged to be of most worth, and it is a source of material upon which to draw in meeting the needs of developing pupils. To the pupil it is not a substitute for the realities of experience; it supplements them, and, like a map, it suggests further possible experiences and the routes to take in order to secure them.

To be admitted to the curriculum, or to be retained in it, a subject of study or a topic within a subject must stand the test of both individual and social function. It must be capable of meeting present needs in the unfolding lives of pupils as well as having some sort of value to society.

Subject matter is liberalizing if it sets free the powers and possibilities of the self and gives him a generous basis of understanding and appreciating the world in which he lives. It is vocational if its main function is to fit for an occupation. The same subject may be liberal for one and vocational for another.

One of the most important uses of the curriculum is to test the capacities, aptitudes, and fundamental interests of pupils — to help them to find themselves and their adaptation to the work of life. Hence it ought to be possible to change a course of study for any pupil at any time when it is made perfectly clear that he is in what might be called a "blind alley" for him.

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CHAPTER V

THE PRINCIPLES OF METHOD

What is method? What need does it meet in the behavior of individuals? How is method of teaching determined? Is it invented outright? or is it an improvement on nature? What are the fundamental educative processes in the experience of the pupil? What principles of instruction grow out of them?

Meaning of Method

Method implies an orderly way of doing something, a mode of procedure marked by definiteness, system, organization of processes. It is opposed to casual, random, or chance modes of activity. The primitive man learned to meet his needs of food and of clothing by definite plans of hunting and fishing. Even though these plans were crude, nevertheless they represented a stage in the development of methods of supplying his economic needs systematically. The farmer has characteristic methods of preparing the soil, of planting various crops, of cultivation, and of harvesting. In so far as this is true he does not have to solve the problems anew every season of how he shall do these

things. The same is true of the business man with his methods of salesmanship, advertising, and accounting.

Methods, or definite modes of procedure, are not wholly inventions of the mind; they grow out of experience. Men try to meet their needs in a variety of ways; they first solve the problems of behavior in all the exigencies of life as best they can. If they are at all intelligent, they cannot help noticing from time to time that certain processes are more successful than others. These they tend to use again. Thus their modes of procedure are improved and they increase the effectiveness of what they are doing. Thus methods grow out of experience, and they return into experience to direct and control it more adequately. This can be seen very clearly in such a process as that of learning to swim. The boy struggles to float and to move forward in the water. He does not at first know how to do this. He makes many unnecessary movements some of which prove to be successful. By repeated selection, in the course of time he gets into one system of correlated acts just those which are needed. He has then achieved a definite method of swimming.

Method in education, no more than in real life, can be invented outright. It assumes processes which are more primary which are to be systematized and organized for readier and more effective control. Education is taking place wherever there is an individual

in interaction with his environment. Wherever active children are growing and developing, something in the world in which they live is serving as subject matter of education. Their reactions are resulting in modifications of their behavior in the light of their experience, that is, they are learning something. The question is, Are they learning to best advantage? Can we do anything to assist them in their learning? If so, we must find out what are the natural methods of learning — how is experience actually reconstructed in the lives of children? How is it enriched, developed, and brought under control? Through what processes aside from those of physical growth does the individual go who starts out ignorant, helpless, and dependent and finally becomes a useful member of society? The method of instruction must correspond to the methods of learning employed by children, only it must represent their more adequate guidance, organization, and direction. Teaching is designed to facilitate processes of experience that are already going on; it is not a substitute for them. Only as I can find out what these processes are can I devise a method of teaching in harmony with the real life of the pupil. If I can find out how a pitcher throws a curve ball, then I can analyze and reconstruct that process and on the basis of my knowledge of what is involved, I can devise a method for teaching somebody else to throw curve

balls. If I can find out all about the normal mental processes involved in learning to recognize printed words, to group them into phrases, and to utter them with expression, then it is possible for me to organize a method of procedure for teaching another to do this more easily and rapidly. If I can find out the various processes involved in thinking a problem through to a successful issue, then it may be possible for me to devise methods of procedure which shall take account systematically and intentionally of all the critical elements, check up all processes, and make sure that they are right. I cannot teach a pupil to think, but I can help him to improve his methods of thinking by making conscious to him the best ways of attacking certain classes of problems, of gathering data for use, and of testing results. My method of "teaching pupils to think" is determined by the possibilities on their part of learning to think, and it is necessarily closely correlated with their struggle to improve their own methods or to control the technique of their own thinking processes.

Methods, however well worked out and formulated in our normal schools and colleges of education, are never formulæ that can be applied directly as one would use a formula of mathematics in which to substitute the specific terms of the problem. Method is always a phase of the teacher's intelligence as it seeks to render

aid to the learning processes of pupils. It cannot be formulated by the teacher or adapted to use in specific cases without an understanding of the fundamental processes that are involved in educative activity.

Fundamental Educative Processes

Learning through self-activity.

Self-activity the basis of learning. — The biological conception of education emphasizes the organism as a center of reactions. When the child confronts the world into which he has come, he is already equipped with certain capacities, innate powers, and natural tendencies, which determine on the one hand what his fundamental needs are and on the other hand what his primary responses to the environment shall be in the attempt to meet those needs. As he responds to the stimuli of the environment, he receives certain satisfactions and dissatisfactions as the result of his activities, and he tends to modify his behavior in the light of what he finds agreeable or disagreeable in the way of results. Learning thus comes through self-activity. There is no other way. The teachings of Froebel based on his wonderful sympathetic insight into child nature and the teachings of modern psychology both agree in throwing this principle into the foreground of attention. But it is still none too well

comprehended and applied. At any point of progress reached, the method of teaching must be based on the tendencies to self-activity that are present. Abundant provision must be made for the pupil's own activities, those which have their origin within himself, not merely those which can be forced upon him. Educative activity must be initiated from within (though the teacher may give the stimulus), and it must terminate within the pupil in some satisfaction of a need that is his. In formulating our school procedure we must make abundant provision for the activities of children, both physical and mental. They may be based either upon the instinctive tendencies or upon the acquired habits and tastes and interests. They should include moral and social situations calling for the appropriate responses as well as those which are motor and intellectual. The wider the scope of possible self-activities, the wider the basis of learning. The elementary school provides plays, games, dramatization, gardening, excursions, story telling, and all sorts of projects and problems besides the traditional exercises of the school. Responses of the pupil to an enriched and interesting environment take the place of memoriter book lessons, or they furnish the basis for drawing the book lessons into the circle of real activities.

Self-activity not an end in itself. — The freedom, spontaneity, and originality of the child are recog-

nized as fundamental. Not dictation but expression is the watchword. However, this attitude must not be misunderstood and misapplied. We do not set mere activity on the throne. Activity as an end in itself is just as bad as knowledge as an end in itself. We want activity that gets somewhere. A large part of the child's undirected activity has important results, but school method is concerned with the problem of making sure that the self-activities of children are called forth in situations under which the conditions are right for fruitful results. We do not want whittling merely for the pleasure of making shavings, but rather whittling that produces something that will reward the activity more richly. We do not want mere scribbling, but scribbling that leads on to writing and drawing. We do not want merely curious prying around in the garden and in the museum, but prying around that shall certainly discover interesting and valuable things. Playing is a form of self-activity that is worth while for its own sake, but at the same time we want playing under conditions and with suggestive materials that shall result in adequate physical exercise, social interaction, and the standards and practices of moral conduct. Freedom, spontaneity, and originality are to be prized for what they are likely to yield in new vital activities that we might not think of in making arbitrary and fixed plans of

teaching. A certain amount of freedom has to be allowed in order that the child may reveal himself to us and that we may know better the trend of his development. But, having found this, we must furnish the materials upon which his activities may work fruitfully instead of their working at random. What has been said of the elementary school child applies equally well all the way through the school system. Only the farther we go the more possible it becomes to secure self-activities within strictly mental situations.

We have contended that the fundamental principle of method is to call forth the self-activity of the child. But this self-activity has no value in itself; to be educative it must yield fruitful results. It remains now to make more explicit what is involved in educative self-activity. What we want to get out of self-activity is such reconstructions of experience as will increase its progressive enrichment, development, and control.

Reconstruction of experience.

Reconstruction involved in all educational self-activity. —The word experience comes from the same Latin root as experiment. The fundamental idea of the term in Latin is to try, or to find out by trying. In a certain sense of the word all experience is the result

of trying. Through these activities of trying we learn, or we may learn. The law of self-activity emphasizes the fact that experience is dynamic; it is always moving in some direction determined by natural or acquired tendencies. But the fact of movement, or flow, of experience does not necessarily imply that it is educative activity. Experience must move in such ways that the results are of value to the organism. With the young, growth and development are of primary concern. The experience of the child must undergo continuous reconstruction in the direction of wider, freer, and more perfect adjustment to the environment. This includes the modification both of *inner tendencies* and of *outward behavior.*

Illustrations. — The child who pulls a cork out of a bottle for the first time gets new sensory and motor experiences which he finds satisfying. The inner tendency to manipulation is therefore reconstructed into a more definite tendency to do this specific thing again which has been found satisfying; he seeks the thrill of the new experience once more. Through many repetitions of the act the conscious experience is made more definite and also the mode of behavior is perfected and brought under control. All learning starts with these two factors of existing tendency and existing mode of behavior as a basis; and it consists in the reconstruction of one or the other — usually

both — of these aspects of experience. To illustrate again, suppose a child sees a bright flame. He is attracted to it by the urge of a very strong natural tendency, and he responds by reaching out and touching it. He receives a new experience of pain, accompanied by a quick reflex withdrawal of the hand and an outburst of crying. Through his reaction to the light a new element has been brought into his experience of the flame; the dancing, attractive light is also something that burns. Still further, from his sudden reflex withdrawal of the hand and the uncontrollable activity of crying, the element of fear is introduced. His consciousness of the light has been reconstructed, we may say, in such a way that the primary appearance of the light and the new cognitive and emotional elements are coördinated into one inseparable whole of mental activity. His original tendency to behavior toward this object is also modified in the light of experience. The reaching tendency has to make place within it for the withdrawing tendency. His behavior is reconstructed possibly into a form of pointing to the attractive flame without touching it. In the growth of all our experience there is this same continual alternation and interaction of existing tendency leading to response, of response modifying the inner tendency, and of modified tendency leading to modified response. There is a spiral of development involving the con-

tinuous reconstruction of experience, each turn of the spiral marking an advance in adaptation to the situations of life.

Additional Illustrations. — In another place[1] I have worked out this principle of the "organic circuit" in considerable detail; but a few more illustrations may not be out of place here. Take the case of the little girl just learning to talk. She walks frequently with her father to the park, where she sees squirrels. Her father teaches her to feed the squirrels with peanuts. This proves to be very fascinating for her. The entire experience is summed up for her, however, in the one word "nut." She calls the squirrel "nut"; and she calls anything that resembles the squirrel, such as a small cat, also "nut." It is all to her the nut experience. Let her react to the cat, however, by offering it a nut, and the experience will not develop in the same satisfying way. Some feature of it is different. The vague consciousness which included this animal in the nut experience has to be reconstructed to suit the new situation. The two animals are noticed more carefully because the demands of behavior require it. The cat experience no longer includes the same elements as the nut experience. The squirrel is distinguished from the cat and related definitely, instead of vaguely, to the nut. Whether she has names for the two animals or not,

[1] "The Psychology of Thinking," chs. 5 and 6.

her experience has, nevertheless, been reconstructed; she conceives them as different from each other, and her mode of behavior has had to be reconstructed to fit the differing situations. Meanings grow in definiteness of character and in richness of content through the process of reconstructing them to meet the needs of repeated motor or mental modes of behavior. "Brave" may mean to the little child "not afraid of the dark"; to the same child at ten years of age "willingness to fight"; to the same person in maturity "the strength of will to face obstacles in the way of right living." The transition from the first to the third stage of meaning has come about through repeated reconstructions of experience in the varied activities of life, each one of which has played a part in reshaping both the inner tendency, or attitude, and the specific outward form of behavior. The moral and religious ideal of the fatherhood of God and the brotherhood of man represents the outcome of many reconstructions of experience in the race and in the individual which go back for their original impetus to the experience of the home. Speech represents the reconstruction of vocal babblings so that they ultimately conform to the sounds which convey meanings to others. Skill of the hand in the manipulation of tools is the result of many reconstructions of motor experiences. The social forms of adult life come as the result of multitudes

of previous reactions that have had to be repeatedly modified and made over before the final result was attained.

Relation of principles to method. — The principle of reconstruction of experience is a universal law of education. Method must be shaped so as not to violate this law, but rather to take advantage of it. There is a wide gap between the experience of the child and the adult interests, attitudes, ideals, standards, meanings, concepts, and specialized modes of mental and motor behavior. It is the function of education to bridge this gap. But it cannot be done by any mechanical process of filling in the ravine with adult material. Neither can the pupil fly across or be carried over on the wings of the teacher. He has to construct the bridge out of his own life experiences. Whatever the experience of the pupil may be at the present time, that is the starting point with which educative method must make its connection. The next problem of method is to find under what conditions the present trend of experience will lead to new situations calling for the reconstruction of experience along desired lines of growth and development — reconstruction that will bring to light new values and secure their incorporation into the life of the pupil. This process is continuous. There can be no sudden break in the educative process without risk of some distortion of

life. The risk is well illustrated in the wreckage of life and its fundamental values that often flows from abrupt change of religious or philosophical views. Method must always have regard for the continuity of the child's experience in passing from one value to another that is higher, broader, and more mature; in passing from one stage of development to another; or in passing from one subject or topic to another.

Enrichment of experience.

Widening possibilities of experience.—Primitive men lived in a world of limited interests and activities. The possibilities of experience were confined within narrow groups of people and within narrow bounds of time and space. The outreach of the experience of the modern man seems to be almost limitless. Time has been pushed back far beyond the traditional limits of 4000 B.C., and the geologic record stretches back into the millions of years. Space has been extended to the remotest confines of the earth, and it has been pushed out so far into the stellar regions that it is almost impossible for the mind to grasp its immensity by any form of scientific measurement yet devised. The smallness of space has likewise been explored by the microscope and other scientific aids until it has become to the scientific imagination a world of limit-

less extent. All this outreach and inreach of the world of time and space is filled with the possibilities of experience. Activities and events of interest and concern to man and to society are everywhere found. Into the present moment are crowded the values of æons of evolutionary development and the treasures of experience from an infinitely extended universe. Just to live at an average human level to-day calls for a depth and breadth and fullness of experience far beyond that of a generation ago.

Relation of the school to enrichment of experience. — From this point of view, one of the most important of all educational processes is the enrichment of the experience of our pupils. In the process which we have called the reconstruction of experience, the child must be led out into ever wider personal contact with things and persons, with physical and social forces. His experience cannot safely be left to chance contacts within his home and neighborhood environment. Even his play experience is very narrow as compared with what it might be. The school can provide forms of play and of games gathered from every age and every community, and, by bringing them to bear upon child life, tremendously enrich experience with all the physical, mental, and social values inherent in such activity. The child will come into contact with the physical environment at many

points if left to himself. But, through the organization of definite trips of exploration to farm, field, forest, museum, shop, and factory, the school can multiply the points of contact with the world and lead children into endless new experiences which lie at the basis of their larger understanding and appreciation of the world and all human industries and institutions. The activities of the manual training room, the shop, the miniature bank, and the laboratory add to the range of his practical experiences of manipulation and control, besides serving as fruitful sources of new knowledge of facts and of fundamental relationships. From kindergarten to college we can hardly overemphasize the function of education as a process of enrichment of direct and immediate experience — physical, mental, and social. Only thus is it possible to escape the danger of making the work of the school artificial and unreal to life, a process of juggling with symbols. The background of actual experience furnishes the basis of motivation, of interest, of the emergence of new problems, and of the meanings inherent in concrete realities which lie at the basis of a clear understanding of things and the play of an active intelligence. A wide, rich, and varied original experience with the realities, both physical and social, is the basis for breadth and vitality of interest, plasticity of mind, sympathetic insight, and balance of judgment.

Place of the imagination in the process. — This enrichment of experience, when it is once under way, can be indefinitely extended through the cultivation of the imagination. Wherever there is adequate sensory basis, the mind leaps beyond the here and now and attempts to comprehend that which is not present to sense. Thus new content is brought into experience together with all the human values that inhere therein. It is an important part of the educative process to furnish in their proper time and place the materials for the enrichment and expansion of experience that come through the activity of imagination. The demands of life to-day require a very large outreach of the mind beyond that which comes into our direct experience. The ramifications and interrelations of our activities and interests compass the globe and take into consideration every nation and people. We draw upon the ends of the earth for the varied comforts and conveniences and necessities of life. We have numerous points of contact, intellectual, social, and industrial, with the entire world which can be comprehended only by the grasp of the imagination. Very early it is essential to begin the enrichment of the child's experience through the utilization of this mental function. Stories bring him the folklore of all ages and lands so that he can enter into the spirit and feel the soul of humanity. Descriptions, supplementary read-

ings, charts, diagrams, museum specimens, moving pictures all aid him in reaching out to the remotest parts of nature and of life. History and literature fill in wide gaps in actual experience and help the pupil to organize and coördinate with the aid of imagination the fragments of ordinary experience.

Enrichment through self-expression.— Self-expression is another form of enrichment of experience that is educationally important. We should make the experience of legitimate self-expression as full, rich, and free as possible all the way from kindergarten to college. The pupil should know from his own experience something of the joy of realization of his ideas and emotions in concrete forms of art and utility. He should have a chance to test himself in as many ways and in as many mediums as possible — in wood and metal, in plastic materials, in dramatization, in music, in literary forms both oral and written, in the organization and direction of affairs, and in the various social activities appropriate to his age. The enrichment of experience should include multiplied sources of satisfaction, so that the educated person is one who is vital and able to live at high potential. One of the worst condemnations of the ideal of formal discipline is to be found at this point — it tended to limit the experience of pupils too narrowly. They were not prepared by their schooling for full, rich, and free participation

in the best things of their environment. Their lives were lived in an unnecessary condition of manual, mental, social, and æsthetic poverty.

Importance of the principle for method. — Let the teacher get it thoroughly established in mind that the provision for the enrichment of experience in every legitimate direction is an essential of all method. "The pressing business of the school is to widen the range of intercourse."[1] It should be a question ever in the consciousness of the teacher when preparing a new lesson or developing a new line of work both as to what primary experience must precede this instruction and also what further profitable enrichment of experience will result from it. There are two stages in the life of the pupil in which this problem of enrichment of experience is more crucial than at any others. These are the kindergarten-primary period and the period of early adolescence. These are periods of unusually rapid growth, of marked plasticity of body and mind, of high suggestibility to new influences, and of rapid expansion of ideas and interests. In these periods it is hardly possible to stress too strongly the processes of enrichment of experience, so long as they are kept in the field of relevancy to the life of the pupil. But at all ages, wherever the pupil is being introduced to new subjects or to new topics within a

[1] H. G. Wells, "Man in the Making," p. 201.

subject, the question of enrichment of experience must be raised. Does the pupil have a sufficient background of original experience or of resources of the imagination to comprehend, to feel, to think?

If we paid more attention to the process of adequate enrichment of experience as we went along, there would be less trouble with the more scientific subjects of study and the more abstract phases of any subject. A background of concrete geometry makes demonstrative geometry real and intelligible. Experience with stories, biographies, and interesting descriptions that have been vital to the child gives meaning and interest to the systematic study of history and literature. Vital experiences with cooking, baking, and preserving fruit make the formal study of chemistry a summary and interpretation of the girl's experience. Projects of gardening, dairying, and poultry raising give meaning, zest, and significance to the farm boy's study of biology. Manual training and shop work lead into the problems of the science of physics. Concrete studies of familiar words and the families to which they belong gives motivation and a background of reality for the study of Latin and Anglo-Saxon. Actual experience in the composition or the dramatization of a comedy or tragedy makes possible a deeper appreciation of the plot of the masterpiece of the great dramatic artist. Thus we might go on

through the whole gamut of school subjects and make a plea for the larger recognition of this principle of an enriched experience both for its own sake and as the basis of all the more formal studies.

Development of experience.

Meaning of development. — Along with the enrichment of experience, and not as a separate process, should go its development and organization. Without attention to the development of experience there is likely to result a scrambled education. Growth may mean mere quantitative increase in bulk or size of the body. Such growth, at least to any considerable extent, is abnormal. One may increase in weight by the addition of unnecessary and deleterious fat. Muscles may be relatively large but also flabby. Physical development implies modification of structure with reference to more efficient function. Exercise hardens the muscles and makes them more capable of work and less liable to fatigue. This means development. The brain is said to be practically full grown at seven years of age; but development continues for many years longer. The connection and organization of the neurons of the brain are perfected and improvement of function continues. So it is with the mental, moral, and social experience of the pupil — we want not merely more of it, we want it continually

developed and organized with reference to meaning, understanding, judgment, thought, relevancy to life and its problems. The pupil's enriching experience must be continually undergoing reconstruction, it must be continually rising to higher levels of appreciation, judgment, and control of values.

Illustrations. — The play experience of the child must be transformed from merely spontaneous forms of pleasurable activity into real games calling for an organization and control of the play activities within an orderly scheme of some sort, usually involving some social coördination. The crude constructive activities of the child must develop into well-planned projects involving definite ends and the control of methods and materials with reference to the realization of these ends. The imagination must not only be enriched quantitatively with interesting materials, but it must be developed to the point that it can grasp comprehensive realities and shape conduct with reference to them. The experience of counting must not stop with itself, but be developed into that of adding, and the experience of adding developed into that of multiplication. The experience of reading must not stop with the getting of the thought of an interesting story in a rather passive way; it must be so developed that it can be made the instrument for finding the data for the solution of problems of many

kinds. A large part of the superiority of the trained man over the untrained is to be found not so much in the quantitative difference in his experience as in the qualitative. The experiences of the trained man are more thoroughly organized and integrated and related to one another and to their uses in life. He sees the meaning of things more quickly and can bring to bear upon any situation all the relevant facts, ideas, or skills that he has acquired. His experience is not merely a quantitative mass but a developed and organized body of tendencies, habits, and modes of behavior that are relevant to the work of life.

Bearing of the principle on conception of subject matter.—The realization of this demand for the development of experience would mean the breaking down, wherever possible, of the barriers that exist between the different subjects of study. The starting point would be vital experiences and their development and organization for effective use. The differentiations of subject matter would result first from differentiations of relevancy and use; the various bodies of subject matter would consequently be less likely to exist in the mind of the pupil in water-tight compartments.

Control of experience.

Initiative and responsibility involved.—It is a familiar saying that the function of teaching is to make further

teaching unnecessary. The pupil must reach the point sometime when he is independent of the school and it is possible to leave his further education to his own initiative. He should not only know how to enrich and develop his experience along wisely chosen lines but also have had sufficient practice in doing so to have acquired mastery of the process. If this stage is ever to be reached, we must remember that it does not come of its own accord merely by virtue of the arrival of graduation time. There are some respects in which initiative and independence are to be achieved as early as the first kindergarten year, and there must be continuous progress in this respect all along the line. The method of instruction that leaves no scope for the exercise of originality and for the assumption of responsibility can hardly be expected to produce independence and self-direction in the lives of pupils. One of Madame Montessori's greatest contributions to the method of education has been the practical emphasis on the power of self-help in little children. She trains them from the beginning to assume responsibility for themselves in all the fundamental activities and to seek help only when they actually need it. She provides many facilities designed to give the opportunity of self-education. Children are not hustled from one thing to another at the bidding and under the direction of the teacher; they have a

chance to work out some things for themselves until they are satisfied. The personality of the child is respected. The kindergarten has had much of this spirit from the beginning, and rapid growth in the same direction has taken place in the primary grades. Without adopting the formal elements of Montessori method, it is to be hoped that our American kindergarten and primary education can carry out still more freely the idea of non-interference on the one hand and the assumption of responsibility of children for themselves on the other. To a certain extent the child should have the satisfaction of actually discovering his needs and of devising his own means of satisfying them, the teacher coming into the process at critical points of need and rendering assistance in the working out of methods or in the provision of materials. In this way the pupil's experience unfolds and develops largely under his own control. He develops initiative and acquires a sense of mastery, both of which are very precious possessions of an intelligent selfhood as well as necessities of an efficient life. This method of procedure requires a rich environment both as a source of stimulation and suggestions and as the source of materials for use in carrying through the pupil's activities. It requires also patient and persistent observation and study of the individual pupil to know just what he is struggling toward in the way of development and

what he needs in the way of stimulus, suggestion, or working materials. But the more fully the pupil can be made responsible for the initiation and execution of his own plans, the more rapidly he is going to learn how to control his own experience and to become independent of formal instruction. What is true of the kindergarten-primary level is equally true in the higher grades and in the high school. The method of instruction must be one which leaves some leeway for the development of the power of self-direction and self-education. How much of this is possible in any given case, with any given subject, under the direction of any given teacher is a practical question that would have to be determined by the actual conditions. Most teachers would have to find out for themselves the limits within which this could be done successfully, only they must not have arbitrary and preconceived notions that prevent them from testing the matter out and finding out whether they can improve upon their present practice. From this point of view subject matter is not something to be imposed upon the pupil but rather something which he is going after in order to accomplish some purpose or end that is relevant to him. He is learning the methods and processes of enriching and controlling his own experience now in order that he may be ready to assume the task permanently in a few years.

Mastery of methods and special technique. — The control of experience is not something that springs of its own accord out of pure will or desire. Initiative is a necessary step in learning control, but it is not the final step. Control means mastery of modes of procedure and their special technique. It is a matter of physical and mental habits under the free and flexible control of ideas, ideals, sentiments, and emotions. This is where discipline becomes an essential factor in education. Control on the side of its mechanism and processes calls for practice and specific training until habituation results. There is no royal road to this goal. It costs struggle and effort; but such struggle and effort ought to be the expression of the self, it ought to have back of it real motivation and to reflect the intelligence of the person. Control of the musical experience of playing a violin means the persistent attempt to habituate muscles, sense organs, and mental processes in certain specific directions. When this is accomplished the inner thought, sentiment, and emotion of the player and the outer, or objective, expression can be made to correspond. There is that harmony of body and mind which the Greek education sought and which might be expressed by saying that the body expressed the soul. The mind disciplined to reason is likewise one in which specific habits have been acquired, habits of mental attack, of

diagnosis of situations, of gathering of data, of testing suggestions, and of organizing ideas. When these habits are achieved, the individual may be said to have gained control over this kind of experience and to need no further instruction in reasoning. Here again it may be pointed out that such control over the process of thinking cannot be achieved without providing pupils with the opportunity to go through the struggle of real thinking for themselves in all the subjects where that is possible and to as large an extent as possible. There must be initiative, motivation, self-direction, discovery, and achievement in repeated experiences of thinking before mastery comes. Method must not be merely a way of getting over the ground with pupils, but rather a plan whereby they will call forth their powers and practice them in the actual control of their experience just as men do in the world outside of school.

Principles Underlying Instruction

Diagnosis and prescription.

Importance of diagnosis.—The physician's method of treatment of his patient is determined by a diagnosis of the case. So it must be with the teacher and his class. Diagnosis is the first step in method. The word diagnosis is derived from Greek forms which mean to know through, or thoroughly. We must know thoroughly

the facts of the teaching situation before we can help pupils in their learning processes. We must understand thoroughly the nature of the pupil, his stage of development, the moving tendencies of his life, the conditions which are shaping it, the difficulties which confront him, etc., before we can tell what to do. This can be made plain through a few illustrations. Take first a case of obstinate disobedience. There is no fixed method or formula that can be looked up in the teacher's notebook to fit the case. What is to be done will depend on a great many circumstances that have to be taken into account. The case must be diagnosed. What is the natural temperament of the child? Is he by nature persistent and marked by a large degree of concentration on his own ideas? These are good qualities, and no child ought to be punished merely for their manifestation. But he must be taught to use them aright. What are his interests? Are they strong in some direction which has been unthinkingly and unnecessarily thwarted by the teacher? What are his home surroundings? Are they such as to make him distrustful of the will of other persons? Is he well treated, or roughly handled at home? Is there anything in his ordinary home experience that makes him continually smart under a sense of injustice? We need to find out all such facts, and many more, before we can be sure of devising the best method of

dealing with this case of disobedience. The right prescription cannot be worked out until we have made the right diagnosis. Children in the first grade often write the figure 3 backwards, also the figure 7, and they make many other peculiar mistakes in the writing of numbers and of words. The inexperienced teacher often thinks that this is due to heedlessness and inattention, or that it is willful disobedience. This is because he has not rightly diagnosed the case. It is almost invariably a matter of undeveloped imagination; the child has no definite image of the way the number ought to look, and he writes it according to his vague image of it. The remedy in this case is twofold — if the child is given time to mature, nature will take care of the difficulty; the other phase of the remedy may be to lay a better basis of correct imagery through repeated observation of correct forms. Children have not infrequently been classified as dull, indifferent, or inattentive, when a more careful diagnosis of their situation would have shown that they had special difficulties of seeing, or of hearing, or that they were coming to school underfed.

Discovery of needs, responses, and materials. — If we are to apply the principle of function, or that of meeting actual needs of pupils, it is necessary to diagnose repeatedly to discover the needs which appear and which the children are striving consciously or

unconsciously to satisfy. In teaching a lesson in reading, we must know what the needs of the class are. Are they at the stage of development at which stories make a strong appeal? Will the kind of story which I have in mind satisfy, or meet a need? What difficulties do the children have in the recognition of word forms? Do they need practice in phonics to overcome these difficulties? Do they need a better control over any other elements of technique that will assist them in reading at the present time? What are these elements? Are they inclined to read word by word? Do they need to acquire fluency? When we have diagnosed the situation to the extent that we have specific knowledge of needs and not vague conceptions, we must go still further and inquire into instincts, interests, ideals, and any other moving tendencies that exist or can be aroused to secure the responses or self-activities necessary to meet the needs that we have discovered. Are the responses which are now available adequate, or are they crude and undeveloped, needing further training? Can the pupil, if he will, make all the sounds necessary? Can he sweep the page rapidly enough with his eye? Can he mentally grasp words in phrase groupings? Or do we have to give him more practice and more time before we have a right to expect these skilled responses? Diagnosis will inquire into available materials and subject matter

suitable for our purposes. Is the story selected one that will make an appeal to the curiosity of the child? Will his interest in it quicken his imagination, focus his attention, impel him to activity at high tension? Do we need to add descriptive and explanatory details, pictures, other illustrative material? Before we can make our prescription, or devise our method of procedure, we must have canvassed thoroughly, or diagnosed, the situation in this threefold way — as to *existing needs*, *possible responses*, and *suitable subject matter and materials*. What has been said here with reference to a lesson in primary reading illustrates the principle of diagnosis in teaching a new topic or a given lesson in history, geography, physics, Latin, or any other subject.

Evaluation as a phase of diagnosis. — Diagnosis with reference to method implies also judgment, or evaluation, of the natural or acquired tendencies and the needs which they are likely to satisfy. Not all impulses are of equal worth. They do not all represent the pressure of the organism toward the satisfaction of needs of the same degree of legitimacy. They do not all point forward to individual and social values that are significant. We have to know what impulses count most at a given stage of life as well as to know which have largest present strength. The child may get satisfaction out of the

expression of the impulse to jiggle, and as compared with the impulse to rhythmic action it may be the stronger of the two. But there is good reason for regarding the rhythmic impulse when it appears as having the larger educational significance. It points forward to important lines of muscular coördination and later to musical appreciation. Diagnosis is not only for the purpose of discovering existing needs, but also for the object of finding out those which have largest significance for growth and development. The rhythmic impulse may assert itself very feebly at first, but it is worthy of stimulation and of repeated satisfaction until it develops and brings forth its legitimate fruits. We need to know not only the present strength and value of existing impulses but also their indicative value. The method of instruction is determined by the latter as well as by the former. This can be illustrated again by referring to drawing. There is a stage at which the need is primarily that of motor expression of an interesting image that presses strongly for release in action; the function of drawing at that stage is to meet the need as directly as possible, even though the product be very crude. There is another stage of development in which the pupil seeks especially correspondence of his drawing with external reality; he cannot be satisfied with mere motor expression. The method of instruction then has to be one that will

include some emphasis on elements of technique such as shading and perspective. Now the crude drawing at the earlier stage might indicate at first thought that the impulse of drawing was not important enough to receive consideration. This would be a false conclusion. As a matter of fact it has great indicative value; through its expression at this stage, even in its crudest form, progress is made to the higher stage at which technique can be added to make expression more accurate. The curiosity of the small child which prompts him to ask "why?" though he is satisfied with the simplest answers, is nevertheless the root of all scientific inquiry. The eager enthusiasm of the adolescent for all that is new in style and in manners is the reflection of an impulse that leads to the rapid socialization of the individual and his free and easy incorporation into the world of adult interests and activities. Knowing the significance of the impulse we can pardon some of its crudities and excrescences and assist it to develop along right lines. Diagnosis into developing needs, impulses, and tendencies must always evaluate these things with reference to their educational significance before methods of instruction can be worked out that will be strictly scientific.

Relation of diagnosis to formulation of aims. — Adequate diagnosis aids prescription by leading to the formulation of clear and definite aims which neces-

sitate precision of method. For example, when the case of "obstinate disobedience" already referred to has been properly diagnosed, the aim will probably not take the form of teaching Johnny to be more obedient, but rather to teach Johnny to understand that his teacher's motives are not capricious like those of his drunken father, and that he has no personal grudge against him when he requires him to conform to certain common regulations. Whatever mode of procedure gains this end probably settles not only this case of Johnny's disobedience but also other possible cases that might arise unless his attitude were changed. In like manner, we might recur to the illustration of the teaching of reading. When all the facts are canvassed regarding the reading lesson, the aim will not be any such vague and general thing as to teach fluency of expression, but rather some specific thing such as to teach these children who tend to read word by word to group words into phrases; the aim will not be to teach clearness of enunciation, but rather to teach Hans and Fritz to say "this" instead of "dis," to teach Willie Oleson to say "jump" not "yump," to teach Mary Jones to say "having" instead of "havin'," etc. This definiteness of aim and of prescription is an important gain that comes from applying thoroughly the principle of diagnosis.

Application to "lesson plans."—The whole art of

lesson planning, which our normal schools have emphasized so strongly, might be much simplified as well as made more practical, if it would keep in mind just two things brought out in this discussion of diagnosis, — *these* children and *this* subject matter. The whole plan of the lesson revolves around these two factors. What are the needs of *these* children? what are their difficulties at this time, what are their present tendencies, what are their specific problems, what are their developing interests, what is the exact state of their progress? And again, *this* subject matter — is it capable of satisfying the needs that my diagnosis has discovered? exactly what in it is relevant? Is it relevant as it stands? or will it need reconstruction, amplification, illustration? The primary thing in a lesson plan is not its conformity step by step with Professor So-and-So's system of pedagogy; it is an exact diagnosis of the teaching situation and the utilization (not the following) of principles of pedagogy to help in the diagnosis and in the determination of the method which shall best meet the needs discovered. It is always a question of *these* children and *this* subject matter to be related in a particular class, in a particular situation, at a particular stage of progress in such a way as to meet the particular needs in the lives of children personally known and understood. Get the thing done, using all the peda-

gogical knowledge and all the professional experience and good common sense available, — that is more important than making it fit into a scheme of five formal steps or any other ideal pedagogical scheme, even one based on my own doctrine of function. I wish I could put it as strongly as I feel — don't pin your faith to the machinery of method, make your plan to meet the specific needs of a specific situation after the most careful and thorough diagnosis of all the factors entering into it; use your pedagogy in the process, don't let it use you. Pedagogy is not a bunch of ribbons with which to tie up packages; it is something with which to think in solving teaching problems.

The law of motivation.

Relation of motivation to work. — We live in a world in which nothing worth while gets done without effort. We tend not to put forth this effort except where satisfaction is secured or conditions that are unsatisfactory are to be changed by it. Motivation is a law of life. Children do not differ from adults in this respect. The law applies in school as well as out of it. Where there is nothing in the nature of the school work that appeals by its own right and draws forth the activities of the pupil, then effort is sometimes secured through the pressure of external rewards and punishments. Special incentives, posi-

tive or negative, are devised. But slave labor is not as profitable in the long run as free labor. In the economic world this principle is thoroughly established. We are coming to see it more and more clearly in the life of the school. There is no difficulty in getting the boy to spend time and effort in building a snow fort or to utilize his energy to the limit in playing baseball. These things meet a deep-seated need of his nature for play. They strike home to him, the effort expended is relevant to some interest or purpose of his. It is expended on the same basis as that of the business man, the farmer, the teacher. It has meaning and significance to him. It is the feeling element, the sense of relevancy to *me*, that gives the tang of reality to what one does. Effort without heart in it is heavy, dull, and meaningless; it becomes drudgery and not real work. Work is wholesome, vibrant, buoyant; it is effort vivified by the consciousness of its worth to *me* or *mine*. Because of the satisfyingness of the goal that is set, interest pervades all the activities that are involved in reaching it. In this sense, work is not psychologically distinguishable from play. The distinction would lie in the greater value of the product of work and the more serious character of the activities. It is genuine work that we want in the school. How shall we get it? Just as we do in life anywhere else, by following the law of motivation. To do that we

shall have to develop situations in which the physical and mental efforts of pupils are felt to be relevant to their own aims and purposes. We must awaken a consciousness of needs and develop an appreciation of the values of those things which will satisfy those needs.

Positive and negative aspects of motivation.—Motivation has both a positive and a negative aspect. The negative aspect is to awaken dissatisfaction with the present self. The questioning of Socrates aimed first of all to accomplish this. He would give the "torpedo's shock" [1] to the self-complacency and self-assurance of the promising youth. When the boy discovered his own ignorance, he became more vividly conscious of his need of knowledge. Then the questioning of Socrates took the constructive form, aiding the pupil to discover the truth. When the child becomes critical of his crude drawing and his dauby painting, or the high school pupil becomes dissatisfied with his commonplace style of composition, that is a critical moment. It may lead to discontinuing of effort, or it may be a factor in stronger motivation. Here is where the positive aspect of motivation must be brought to bear. Over against the unsatisfactory self must be set the ideal self, the self in which a new

[1] A phrase used in the story of Meno and the slave boy, in Plato's "Dialogues," "Meno." Jowett's translation.

achievement is to occur. The self that can draw well or that can write well must be vividly set over against this unsatisfactory self. The new value which would satisfy must be made to glow with warmth and with the tang of reality until in imagination and feeling it is already an inseparable part of the real self, in fact is felt to be the truly real. The warmth of feeling binds the ideal to *me* until it would positively hurt to cut it off; the self would be dismembered just as truly as if the hand were to be cut off, or the eye gouged out. In fact, many men and women would sooner suffer the dismemberment of the body than the loss and wreckage of their ideals. Motivation is at its maximum where the achievement of the ideal is felt to be a necessity of the self, something that makes a vital difference to *me*.

This discussion suggests that criticism, whether self-criticism or that of the teacher, is not justified on its own account; it is only the negative phase of motivation. Criticism that is to be effective must stimulate ideals of achievement and make them appeal. Much of defect will fall away of its own accord, just naturally be sloughed off, if we can get the mind focused sharply, strongly, and enduringly upon worthy ideals of achievement. Here is to be found the fallacy of the abundant use of red ink on the composition papers of grammar grade and high school pupils. Just as it stands it is

negative in its effect. It does not furnish adequate motive for rewriting. Attention might better be focused sharply on a few fundamental ideals of correct composition which the pupil feels that he can achieve when his errors are pointed out. He will find more satisfaction in overcoming a few difficulties and noting his progress than in making a feeble blanket attempt to be right in every possible detail.

Motivation a more fundamental concept than interest. —Method of procedure that arouses pupils to the consciousness of their needs and the worthwhileness of specific things to be achieved will be fruitful of effort. Motivation is a much more fundamental concept than interest for our pedagogy. It cuts much deeper. It carries with it none of the implication of making things easy for pupils which is so often read into the doctrine of interest. In fact, we recognize the truth that out in life the things that are of most worth are secured only at the cost of struggle and hard effort. It is this strenuous effort in the work of the school that we desire, the effort that achieves. That is why we emphasize motivation; the highest forms of effort follow freely in response to ideas of relevancy and worth. Drudgery is not morally or intellectually profitable. It is work and the joy of achievement that count in real life.

Sources of motivation for school work. — If the prin-

ciple of motivation is to dominate the method of instruction, we need to know what are the sources of motivation upon which we may draw. These sources are to be found in needs that are inherent in (1) instincts and natural tendencies, (2) acquired habits, tastes, ideals, and interests, (3) practical situations calling for action, (4) the outreach of the mind itself as expressed in curiosity, the developing imagination, and the challenge of thought problems.

The instincts, natural tendencies, and inherited capacities of children are the primary sources of motivation. Play and general physical activity are satisfying in themselves; they need no further justification. When we connect school work in the kindergarten-primary period with these powerful natural tendencies, the problem of motivation is quickly solved. The constructive impulse can be made the source of motivation for a wide range of school activities that reach far beyond the mere training of hand and eye. Sometimes it seems as if almost everything that is worth knowing is related to, or involved in, some sort of constructive activity. The impulse to collect and hoard things may serve very useful purposes in leading the way to problems of geography and natural science. A strong natural capacity for drawing, music, mathematics, languages, or anything else means that the individual possessing this natural capacity will find

satisfaction in achievement along the line of his "bent." There will be strong motivation for school work that exercises the natural capacity, and everything that is brought into functional relationship with it will be found interesting. In utilizing natural tendencies and inherited capacities as the basis of motivation for school work, we must remember the principle enunciated by Dewey [1] of not merely indulging the natural impulses but rather satisfying them; we must help them to realize themselves in positive progressive achievement. Otherwise the interest growing out of their exercise is soon exhausted, and the pupil is apt to become blasé or else dependent on excitement for a renewal of his efforts. To allow the child to scribble indefinitely is to indulge a natural tendency; sometime or other it ought to bring him more satisfactory results, the positive achievement of writing or drawing. Boys are often allowed to indulge their constructive impulses; they get nowhere, though it would be possible with a little guidance to develop them to such an extent that they could make useful toys, understand the mechanism of electric bells, and possibly make their own wireless telegraphy outfits. The doctrine of freedom as applied to the school does not properly mean allowing the pupil to do just as he pleases, if what he pleases to do is merely to indulge his impulses. Freedom

[1] Dewey, "School and Society."

should mean liberty to achieve, to do something, to work out to advantage what is in one. There is law and order in that kind of freedom, and there need be no real disorder in the wisely directed schoolroom in which that kind of freedom is cultivated.

All the natural sources of motivation should be made the center for hosts of related activities that get their meaning and significance, their felt relevancy and interest for the pupil from their connection with the more fundamental sources of his energy. Thus from the basis of that which has natural motivation for him, he is led to continually reconstruct his experience, widen its outreach, and draw into it new values. He will be continually acquiring and developing new habits, tastes, interests, ideals. These in turn become just as real sources of motivation for further school work as the natural tendencies. With the growth of intelligence, the ideals and ends that will serve as the basis of motivation may become more and more remote from the needs of the immediate situation; and school work that is more theoretical, abstract, or remote in its bearing on life may furnish the same zest of pursuit and call forth the same prodigality of effort in its attainment as that which is of more immediate concern.

When practical situations calling for action of some sort confront one, there is an immediate and strong basis of motivation in real life. The school can take

advantage of this principle to some extent. There are practical needs in the lives of pupils and in the school community sometimes that may be utilized as a basis of work. Perhaps there is a new lawn or garden to be prepared, tennis courts and baseball grounds to be plotted and prepared, apparatus for the playground to be made, if it is to be had at all. Such practical situations provide a form of motivation for a great deal of work that properly belongs in arithmetic, geography, or natural science. The situations calling for facts and for the control of methods of procedure are real as opposed to formal. The things which they must learn become focal in the consciousness of the pupils because they are relevant and necessary in meeting actual needs. In this account of sources of motivation, it should not be forgotten that social instincts, social ideals, and practical social situations have not been drawn upon as fully as they might be in providing motivation for social, moral, and many types of intellectual and æsthetic culture.

In the tremendous emphasis which we are putting upon the instinctive bases of education at the present time, with a corresponding emphasis on the motor processes and the physical activities, we must not forget that the mind itself has dynamic tendencies and that there are strong bases of motivation in the needs that are inherent in the outreach of the mind itself.

The first of these natural mental tendencies to demand attention is curiosity. This represents the outreach of the mind for new sensations and new experiences of every sort. The impulse is very strong in children. School work sometimes tends to crush it out, instead of utilizing it as a natural source of mental energy and activity. The curiosity of the little child centers rather largely in the things that impress the senses, that involve activity, or that have a direct emotional relation to his own life, such as other children, pet animals, toys, the activities of people in his own home and immediate surroundings. Curiosity is the basis of a sympathetic interest in all sorts of things in the immediate environment; hence it may be used as the basis for teaching the first lessons in natural science, geography, and the occupations of ordinary life. Lessons in reading and geography may find increased motivation in the curiosity of children about the pictures in their books, about specimens brought in from field or museum, and about the products that they find on the table and in the market which come from distant or foreign parts. Strange phenomena of physics, chemistry, and astronomy make their appeal to the curiosity of the older pupil and serve as a basis of motivation and interest in his scientific studies. With the development of imagination, the mind reaches out naturally to comprehend a wider system of relation-

ships. Story, biography, and history make their appeal to the imagination. Literature, geography, and science furnish abundance of material for the imagination to feed upon. An active mind is bound to seek a richer body of materials for its activities to organize, and it is constantly seeing things in new settings and relationships. The method of instruction should utilize this source of motivation. If it can be discovered in what direction the imagination is active and reaching out, work related to that trend is likely to prove attractive and to be pursued with eagerness and zest. The challenge of an intellectual problem ought to be another fruitful source of motivation. Even little children like to use their "thinker" within the limits of possible success. Man is a reasoning animal, and we know that there is satisfaction in the exercise of any normal function. There ought to be something of a thrill in being confronted with a real problem for which one's powers are ready and the bearing of which he can see. There is joy in achievement in mathematics, in the solution of problems of historic development, in the induction of new truths of science. Let the pupil taste the pleasures of mastery and discover his own thought powers, and he will like to solve problems. He will come to thrill with the challenge of a problem; the challenge will be ample motivation for the concentration of all his powers and the putting

forth of his best efforts. Some place should be found for this kind of motivation in the methods of instruction from the lowest grade to the highest. We probably do not stimulate and develop enough this source of appeal. Our methods tend to slur over the real difficulties, making things easier for the sake of more rapid external progress. Whether in practical things or in those which are intellectual, there is a deep sense of satisfaction in being able to say, as a little eighteen months old child does, "Did it myself." This joy in achievement is one of the most fundamental of all sources of motivation. The teacher whose methods make a large place for genuine achievement on the part of pupils is likely not to find any lack of motivation, any real unwillingness to do their work.

Motivation not a separate step in method. — Our emphasis on the necessity of motivation does not carry with it the implication that a definite part of every lesson period must be given to "motivating the work." Work properly adjusted to the known needs and capacities of pupils and providing for progressive achievement is likely to carry its own motivation. There are times when it is necessary to make the main consideration that of getting up steam, but an engine ought not to be stopped continually to get up steam. Motivation is not to be put down as a step in method or lesson procedure; it is something that the teacher

has to plan for both as the basis and as the outcome of his method of procedure. The completion of one unit of work should carry with it motivation for an attack upon a new problem related to, or growing out of, the former one. Graduation from school itself should mean that the pupil has acquired motives for the continuation of his efforts at further self-education.

The use of projects and problems.

Meaning and nature of projects.— In the formulation of methods of instruction, there is a growing tendency to consider projects and problems as the normal centers around which the learning activities are to revolve. By a project we usually mean some practical enterprise undertaken by a pupil or a group of pupils. The making of a table for one's self or for the use of the home or the schoolroom is such a project in the field of manual training. The project is contrasted with that method of procedure which concerns itself with the mastery first of part-processes such as sawing square corners, planing boards smooth, making various classes of joints, all done for the sake of training or in anticipation of some future use. The project method has taken strong hold upon the teaching of manual training and the domestic arts. It is gaining ground very rapidly in rural education. Boys carry out definite projects for the season or for the year in gardening, corn raising, cotton raising, dairy-

ing, milk testing, bee keeping, poultry raising, etc. These, of course, must be on a limited scale so that no project shall occupy all of the time and attention of the pupil to the exclusion of other lines of work. Country girls, in like manner, undertake projects of gardening, preserving of fruit, making of butter, etc. In city schools, higher grade classes in arithmetic have been known to undertake the project of finding out just what their parents spend upon them and keeping a strict account for the various items of clothing, food, and the various kinds of pleasure. Projects involving the planning, preparation, and execution of everything that is necessary in giving a party or a reception are becoming more or less common. In practically every grade from the kindergarten through the high school it is possible for a skillful teacher to secure from the class itself suggestions of worthwhile projects that may be undertaken as supplementary or as integral parts of their work in the subject that they are studying.

Basis of value of projects.—In employing the method of the project, one must not suppose that it has some magical educational efficacy. Its value does not depend wholly upon the fact that it provides scope for self-activity. It does this, to be sure, in an admirable way; but the value of the project will consist in the use to which that self-activity is put. Self-activity must be guided and directed into fruitful channels. Every

project must be examined critically with reference to its educative promise. First of all, one should ask whether the project is typical of life in the real world. Does it bring pupils into more direct contact with things, processes, activities, modes of procedure, facts, interests, and ideals that are significant in modern life? Another thing that we must ask of any project is the question whether it will lead our pupils face to face with the problems, or any of the problems, of the sciences, arts, industries, or the humanities with which the curriculum deals in such ways as will make necessary further and more systematic study. We must remember also that projects are not likely to yield their full value without adequate supervision. It is not sufficient to have a country boy undertake the care of a cow for a year, if this means merely doing chores for his father. The work must be planned so as to conform to the principles of scientific feeding and scientific care of the milk, and it must be supervised with reference to that end. The boy must make it his business to determine whether the cow is worth the expense of her feed and care, and, if so, how profitable she is. This means the study of a great many scientific facts about food values, means of testing milk for butter fat, sanitary care of milk, marketing of cream and butter; and it means a pretty thorough practical course in keeping accounts. His final report on his project

should be put in good business form, so as to show exactly and in detail what he has found out. His report might even involve the use of statistical tables and the presentation of salient facts in the form of graphs. Such a project carried through properly yields a vast amount of practical and relevant knowledge. It gives training in arithmetical processes, it necessitates continuity of effort, it raises vital problems of farm and community life, it leads directly into an interest in fundamental sciences, and it lays the basis for understanding and appreciation of a great fundamental industry and the part that it plays in the life of society. It is the vital center for the correlation of a great many kinds of knowledge and for the emergence of many new problems requiring study and investigation. Through social projects in the domestic science class the girls learn in a vital way the best usage in the matter of invitations, preparation, and decoration of the table, the welcome and seating of guests, the social conventions of dining and entertaining, besides having the opportunity to assume responsibility for buying materials, preparing food, and accounting of costs. Such a project is a center around which a great deal of study and investigation revolves naturally. Nobody can tell in advance just what its outreach may be. The project in arithmetic previously mentioned had many consequences other than that of serving as a basis for

the teaching of itemized accounts. It made many of the children thoughtful about the income of the family and its proper and economical expenditure. It helped them to distinguish between necessities and luxuries, between reasonable expenses and extravagance. It made some of the children more thoughtful and appreciative of what their parents were doing for them, and led them to see something of their obligation to assist by taking better care of their clothes and by being very reasonable in their requests for money to spend on pleasures.

Relation of problems to projects. — Project and problem cannot be sharply distinguished from each other. The term problem is used for that class of undertakings in which the activities called for are dominantly intellectual or related to some intellectual end. One of the great values of the project method is that in the pursuit of the various projects of the class many of the fundamental intellectual problems are bound to arise. Problems of mathematics, of physics, and of industrial life are sure to grow out of well-conducted and well-graded projects in manual training. Problems of chemistry, sanitation, hygiene, and social intercourse grow out of projects in domestic science and domestic art. Problems of mathematics, chemistry, biology, physics, transportation, and exchange are likely to be reached through projects in the field of

rural life. Thus we might go on indefinitely pointing out classes of problems that will almost certainly confront the pupil whose school life is rich in projects. These problems have a great advantage over those which are formally presented by the teacher or the textbook. They arise under conditions that make their solution necessary to the carrying through of a practical enterprise in which the pupil is already interested, or their solution is relevant to a growing intellectual interest that has its roots in practical experience. Such problems have the tang of reality; effort spent in their solution seems relevant and worth while to the pupil. One problem leads to another that is involved in the first or closely related to it. Thus purely reflective problems are reached in the course of the developing experience. These purely reflective and abstract problems, however, do not seem forced upon the pupil from without. They have arisen in his own experience in the course of mental activities and interests to which they are relevant. They appear in a setting of experience in which there is an ever-widening circle of relationships of things to one another. The problem is a challenge to thought to clear up, interpret, correlate, organize, and explain that body of experience. The problem-interest is likely to grow and develop when it works under the stimulus of progressive achievement. Then the path is clear for the more abstract

and highly scientific aspects of any subject for which there is already an adequate background of experience. These abstract studies are not to be despised because of their apparent remoteness from the interests of life. There is altogether too strong a tendency in the present demand for the practical to ignore the real value of the theoretical. It sometimes pays richly in returns to get away from the immediate and present for a time in order to get back at it with added insight, power, and with new tools. The method of instruction must not ignore the theoretical on account of its difficulty, but rather must concern itself with the development of the problem-interest progressively from stages of nearness to concrete experience up to the more remote.

Advantages of the method of projects and problems. — There are many advantages in the method of projects and problems when it is thoroughly understood and wisely conducted. It is readily seen that it affords many opportunities for self-initiated activities. There is much room for the cultivation of initiative, originality, and enterprise. The educative activities, both physical and mental, are called forth in situations in which they are felt to be relevant; they cease to be formal and become functional. The things which the pupil learns, whether classified as knowledge, skill, or discipline, are not forced upon him from without; they are forced upon him by the necessity of the

forward movement of his own activities toward a self-imposed goal of achievement. Motivation becomes internal and inherent, and effort is free and self-directed. The pupil is engaged neither in play nor in drudgery but in true work. Where problems to be solved replace telling and dictation, the mind has a chance to draw upon its own experience for ideas and suggestions, to judge and evaluate these suggestions, to select and organize physical and mental materials with reference to their bearing, to control methods of procedure in relation to specific ends to be reached, and to test results by their application to the further control or explanation of experience. The training received in observation, in thought processes, in the acquisition of habits, skills, techniques, and ideals is identical with that required in life outside the schoolroom; hence this training is likely to carry over into the subsequent life of the pupil after he leaves school. It is the kind of training which is adapted to meet the needs of life because he is learning the actual methods and processes employed by men in the modern world. He is getting insight into the problems of life and the methods of their solution, hence his circle of culture is constantly widening. To the teacher accustomed to the subject-matter ideal the method of projects and problems may seem to be slow and the amount of ground covered relatively small. But this loss is more apparent than

real. There may be less knowledge put away in cold storage, but there is a relatively larger part that is in constant use. The grasp of meaning, the sense of relevancy and reality, and the ability to make practical use of knowledge is apt to be much greater. The setting and interrelationship of facts and principles is richer; there is less of isolation and detachment of knowledge. And when it comes to habits, skills, and special technique, these are being shaped by continual use in the specific directions in which they need to operate in real life.

Range and limitations of use of projects and problems. —At the present time, the ideal of the project and the problem is profoundly affecting the reconstruction both of curriculum and of method. It is comparatively easy to effect this reconstruction in the field of the practical arts and of agriculture. Projects, both individual and social, are readily found; and, from the pursuit of these projects, problems leading into the heart of the subject that is being taught are sure to arise. In composition, literature, geography, history, and science, it is not quite so easy to secure good projects as the basis of method, although much can be done by those who are willing to experiment.[1] One

[1] A good illustration of the principle of the project in composition is to be found in a recent book by S. A. Leonard, in the Riverside Educational Monograph Series, on the "Teaching of English Composition in the Grades."

difficulty in these subjects is to be found in the fact that interest in problems, an intellectual interest, has to be relied on sooner than it does in the case of the practical arts. The utilization of the problem-interest requires more skill than is necessary where practical projects are more prominent. Nevertheless the method is essential to the development of vital knowledge and the acquisition of right methods of thinking. It will require much experimentation by many people to settle the main lines of procedure with all the fundamental subjects of the curriculum. While compelled for the present to work within certain prescribed limits as to subject matter and its organization, it is still possible for the teacher to apply the method of projects and problems to certain phases of his work and to acquire skill in its use. Until such skill is acquired it would not be wise for the teacher to try to reconstruct his method completely to conform to the new principle. It can be employed in certain lines of supplementary work which will vitalize the ordinary routine teaching by stimulating interest in the subject and by raising problems that can be discussed in the regular class work. Often the method serves as the best approach to a new subject or to a new topic within a subject. It is likely to break down the tendency to memoriter study and routine recitation. Books are more likely to be used as means of

rousing one to the consciousness of problems and as furnishing a body of conveniently organized material upon which to draw for their solution. A little teaching by the method of projects and problems is likely to vitalize the pupil's methods of studying. Hence every teacher should employ the principle within the limitations of facility and experience until such time as facilities improve and further skill is gained. Many teachers will find that after they have demonstrated their skill and have perfected the organization of their work along this line the limitations upon its use will gradually disappear.

From function to technique.

Older and newer methods compared.—The older methods of instruction tended to throw technique into the foreground very early. In the teaching of drawing, instruction was first given in the elements of form; pupils had to practice drawing straight lines, curves, circles, ellipses, etc., before they undertook to draw objects or to express their ideas with pencil or brush. At the end of the course, they could draw a nicely placed group of geometrical solids with proper shading, perspective, and symmetrical arrangement. But it was very rarely the case that any one in the class could draw the picture of a running dog or could make the sketches necessary to illustrate a story. In music, there was a long and pain-

ful initiation into the mysteries of reading notes before much singing was done. Now, we reverse the order: sing first and later master the technique by means of which we can make singing material more readily available. In reading, the technique of the alphabet, of phonic combinations, and of syllabication preceded reading, or came very early in the teaching of the subject. Now, we emphasize the story and the recognition of meaningful words, before we teach the alphabet or drill in phonics. Technique becomes a means to an end inside of a working function. In arithmetic one had to master the technique of notation and numeration, both Arabic and Roman, and this for large numbers, very early in the course. In geography, technical terms of mathematical and astronomical geography were emphasized from the beginning, and often they were memorized long before it was possible for the pupil to understand them. In language, there was a great deal of study of grammatical forms and very little practice in composition. The idea all the way through the curriculum seemed to be to get the technical tools of learning into the hands of the pupils as soon as possible. The traditions established through centuries of the practice of a vocation are not broken down very easily. They linger on even where newer theory is accepted. We still find in much of our teaching this tendency to the early emphasis of technique.

We have not yet made the complete reconstruction that is demanded in the light of the psychology of growth and development as opposed to the psychology of adult finished products and processes.

Right relation of function and technique to each other. —If we observe the laws of growth, we cannot help noticing that function is more primary than technique, needs more primary than the specific methods of satisfying them. The child tends to do something, and in the progress of his experience he gradually finds out how to do it better than at his first crude attempts. This is true of such physical activities as creeping and walking and swimming. It is equally true of learning to talk. Here the child tries to express his ideas in ways that will meet his needs; and he fumbles around a great deal until he hits upon right modes of expression. He builds up the technique of oral expression little by little in immediate connection with its use. Nobody would think of such a thing as teaching the child to talk in any other way. It is only in the school that the attempt is made to violate the natural method of learning and to force technique beyond the requirements of use, to teach it as a separate thing in advance of its need.

In learning to draw, the child left to himself works out in crude form the ideas that are dominant in consciousness. The images of interesting things press for release,

and drawing performs the function of expression. The wise teacher is more concerned with the building up of interesting images and the cultivation of the impulse of expression in the early stages of teaching drawing than to get the finished products that might come from a larger insistence upon the elements of technique. As the drawing activity develops and becomes more conscious of its aims and purposes, the need for technique becomes more urgent. Gradually more attention has to be given to relative sizes of things, to accuracy of detail, to appearance of things at a distance, etc. There is a larger demand for all that gives the semblance of reality. Then it is that a knowledge of the technique of shading and perspective becomes necessary. When the elements of technique are taught little by little in connection with the growth of experience and at such points as they are relevant to existing needs, they are not so likely to swamp the development of the inner impulse itself. After all, if one have all the elements of technique and have not the art impulse, his technique is a vain thing.

In the technique of reading the same principle applies. The first concern of the teacher is that of function. The desire to read, the love of reading, this is the big thing. Knowledge of the alphabet, of phonics, of syllables, etc., are means to a further end. They are to be brought in at the point of further need for them, drilled upon if necessary as the impediment to func-

tion becomes more conspicuous; but they are never to be looked upon as ends in themselves, as is apt to be the case when they are put into the foreground and taught in advance of the situations in which they become significant. The method of language instruction also now tends to emphasize function first. Children talk about interesting things of their experience — pets, toys, visits, excursions, stories, incidents of home and of school life — about anything that gives the basis of interesting imagery that seeks expression in language. In repeated experiences of this vital sort, they learn gradually in the attempt to make their companions understand and feel as they do, and through the incidental suggestions of the teacher, to use better forms of speech and to organize their thought in connected form. In the course of time, the need may appear for special instruction in certain elements of technique. Lessons may then be given which focus upon those things which have been made necessary by the experience of the class itself. Thus the instruction in the technique of grammatical forms is not a purely formal process separate from the situations in which these forms will be used. It is not something which has been determined by an analysis of language as a science, and, after having been so determined, forced upon the class in advance of any idea of its bearing or significance. It is not studied merely in

anticipation of some possible future use, but to meet an actual present need of better control over the language process.

In all the thought subjects from kindergarten to college the same principle applies. Thinking is a function, it is mental activity carried on with reference to a purpose or end. Thinking has its characteristic technique by means of which the highest efficiency is attained. But we cannot train pupils to think merely by giving them the elements of this technique and drilling upon them. Thinking does not develop through the mastery of adult methods, manipulation of forms of the analysis of problems, learning of definitions and formulæ which summarize thought. It comes first of all through the actual struggle with problems which are real to the experience of the individual. He must use his own resources of knowledge, of imagination, of judgment, of organization of ideas as best he can. As he does this in repeated instances, he will come to a realization of the need of better control of his knowledge such as is given by formulating definitions and principles; he will be confronted by the necessity of specialized methods of attack, of better methods of solution, and of better tests of conclusions. Then he is ready for help in gaining control of the elements of technique characteristic of trained thinkers. I do not mean to say that

all this training in technique will come at the end of a long period of exercise of function. It will go hand in hand with practice in thinking, the simpler elements coming earlier and the more complex later. The main thing is that the training in technique shall not be in advance of use for it, but rather as the means of controlling the thinking process more fully. In mathematics, grammar, and Latin, there is an especially strong tendency to emphasize the elements of technique out of their setting. In these subjects, the analysis of the finished products of adult thinking and organization is comparatively easy; and we need to be on our guard more especially against the violation of the principle of function first and technique afterwards.

From the concrete to the abstract.

Meaning of the terms. — In the growth and development of the mental experience, there is no sharp line of demarcation between the concrete and the abstract. For our purposes we may distinguish the two in terms of the degree of symbolism involved. Where there is little of symbolism and meanings are grasped rather directly and immediately, we have the concrete; where there is more symbolism and meanings are gotten indirectly and by means of things signified, we have the abstract, or the more abstract. In the abstract, meanings are set free from the original setting of concrete

experience in which they grew up and are carried by symbols. There are many degrees of abstraction. Some degree of symbolism is likely to be found wherever imagination and thought enter at all. It is a law of mental economy to let some part of a complex experience stand for the whole. Not every item of the original experience is likely to be reinstated for the purpose of thought; the mind is selective in its activity, dropping out portions of the original experience and utilizing only what is significant for present purposes. I am not likely to call up in my mind for thought purposes the complete visual picture of any tree that I know, the complete auditory image of a song or a bit of conversation that I have heard, or the complete muscular feeling of a game of tennis that I have played. If my purpose is identification, as in memory, I may call up more of the concrete setting than if my purpose is to make some connection of thought through the grasp of meaning. But in either case there is a certain amount of symbolism. I allow some part of the original experience, some outstanding feature to become the significant or indicative thing about it. With the development of language, arbitrary word symbols come to take the place of this, and I have advanced a step farther in abstraction. The more completely I rely for my understanding of things on the setting of particular original experiences, the more is my thought

concrete; the more freely I handle meanings through symbols the more completely is my thought abstract. Both concreteness and abstractness are matters of degree, of more or less relatively. I can say that arithmetic is more concrete than algebra, or that it is less abstract than algebra; and I can say that algebra is more abstract than arithmetic, or that it is less concrete. The terms concrete and abstract are relative to each other, not absolute. They indicate a sliding scale of symbolism on which I may note the degree either of concreteness or the degree of abstractness of ideas.

Emphasis on concrete as basis of meaning. — In our formulation of method, we are concerned with the question of the conditions under which emphasis should be put upon the concrete and under what conditions we should seek the more abstract formulations. First, we shall discuss the concrete. It is evident that symbols have no value except in terms of what they signify, or the meanings they carry. The American flag has no meaning to the wild man of Borneo. It is simply something that attracts his attention by its bright colors fluttering in the breeze. To the American citizen traveling abroad it is a symbol of his nation's power and protection. It has meaning for him because he can translate the symbol into specific concrete experiences which it suggests, such as the following: If I am interfered with here, I can

appeal to the American consul, who will see that my rights are protected. All the symbols of learning are valueless except as they can be translated on demand, or in case of need, into the terms of specific concrete situations. In the technique of instruction, then, the primary problem is that of meaning, or understanding. Meanings grow out of particular concrete experiences; they depend on the establishment of bonds of connection between specific situations and the appropriate responses to them. Consequently enrichment of concrete experience lies back of the understanding of all the subjects that we teach. All that was said in our previous discussion of the enrichment of experience applies here. If my task in arithmetic is to develop the *meaning* of addition, then I must resort to every form of concrete experience that will build up this meaning. I must have the pupils go through the activities of putting together and counting many different kinds of units until it is clear that when we ask for the sum of two numbers we want the total number of units that comes from putting them all together. When this meaning is once developed and grasped, it is absurd to think that the use of concrete materials is superior to abstract in the teaching of addition. On the contrary, when the problem is no longer that of developing the meaning of addition but of teaching the additive combinations, it is a very great waste of

time to drill on such exercises as 3 apples plus 5 apples, 5 horses plus 6 horses, 4 quarts of water plus 7 quarts of water, etc. What we want established here is the firm association $3 + 5 = 8$, $5 + 6 = 11$, $4 + 7 = 11$, etc. For this purpose the abstract forms are superior to the concrete. So it would be in multiplication; if it is a question of the meaning of the process, then that meaning must be developed through a sufficient number of concrete experiences of finding out what 3 fours make, what 5 sixes make, etc. After the meaning is clear, the multiplication combinations can be learned more rapidly and more effectively for further use without any reference to the concrete experiences of addition out of which they grew. In the teaching of algebra, the meaning of positive and negative numbers has to be developed through a large number of concrete cases of the applicability of these terms and the use of the signs that designate the opposite quantitative relationships. In general, the use of the concrete in our method of teaching is either for the purpose of developing meaning or for the purpose of making the meaning clear. In every stage of the educative process, it is a question that method has to raise continually, "Will the pupil understand?" Before taking up any new topic, we need to raise a lot of specific questions such as the following: Do I need to provide more objective materials? more pictures, charts, diagrams,

models, vivid descriptions, supplementary readings? Is there need of insisting on constructive and expressive activities? My experience in supervising practice teachers leads me to believe that it is one of the commonest faults of beginners to plunge into the symbols of a subject too rapidly, not providing enough of illustrative and supplementary material to serve as an adequate basis of understanding the new ideas. With our understanding that concrete and abstract are relative terms, the principle enunciated would not mean that in all cases of teaching new subject matter or of dealing with new abstract notions we should go all the way back to the physically concrete situations. In any case we would go back far enough for our connections to make sure that the new symbols are capable of translation into the more familiar. Exponent, when taught in arithmetic, must become something more than a little figure to the right and a little above a quantity to indicate how many times it is used as a factor. It must be possible for the pupil to translate this symbol into the more familiar arithmetical equivalent, for example $4^3 = 4 \times 4 \times 4$. The rules in Latin grammar are not understood unless the pupil can actually translate them in terms of concrete illustrations of their application. The test of the understanding of the abstract is always the ability to translate it into some set of more familiar terms. There must

always be enough attention given to the concrete to make certain such a grasp of meaning as will make all the abstract terms translatable.[1]

Emphasis on concrete as basis for realism. — Method might rightly resort to the concrete for another purpose than that of making sure of meaning. In many cases there is a large immediate interest in that which is relatively concrete; hence the starting point of motivation might be found in the concrete method of approach to a new subject. This can be more readily explained if put in a little different form. The educational demand for the concrete has been, from the time of Bacon and Comenius, in large part a call for a larger element of realism in education. The thing is more real than its symbol, the meaning than the printed word. This larger sense of reality inherent in the concrete is apt to make it more interesting, it seems more relevant and less remote from life. But we must not narrowly confine the meaning of concrete in this sense to physical, tangible objects. Objects as such are isolated things and have little or no value. In so far as they play a part in *activities* they become related to the self as things to be used or avoided; also in activities objects get related to one another and have a significance as playing a part in some process or processes that are of concern. Activities, events, pro-

[1] *See* Miller, "Psychology of Thinking," ch. 12.

cesses are just as concrete and real as objects, perhaps more so. The method of realism fundamentally means beginning with the self-activities and utilizing everything that is relevant to their realization. The story which the primary child reads may be more real to him than any quantity of pictures of scenery. Realism, or concreteness, is in part the way things strike *me;* it is *relevancy to my experience,* not merely physical and tangible existence, that counts. A large part of the concreteness of the method of projects is to be found in this larger sense of reality, of *relevancy to me.* The rightly selected project grows out of practical or intellectual experience and fits into it with a sense of belonging-together-ness. At this point it might be well to call attention to the fact that the value of the laboratory method has often been misconceived. It does not justify itself merely on the ground that it deals with physical things. The laboratory problems and the laboratory materials may be just as abstract and remote from the experience of the pupil as anything which the scientist is apt to condemn in the despised Greek grammar. There may be just as little that is real in it in the sense of touching the life of the pupil as there is in literary criticism imposed upon pupils who have never read the authors under discussion. I have seen pupils dissect cats and rabbits in a class in biology, doing it according to directions

laid down in the laboratory manual, for whom the whole process was as formal and meaningless as memorizing nonsense syllables. The fact that they could touch the materials with their fingers and see them with their eyes did not make them real to them any more than it makes learning nonsense syllables real because you can see them in print and hear them when you recite them. Laboratory chemistry and laboratory physics are often very unreal to girls. Starting with the concrete in these sciences means not so much starting with material things as it does starting with things that connect with the life and experience of pupils. It means, as we said in another place, approaching chemistry for girls through domestic science and for boys through agriculture and industrial processes that are familiar. It means starting physics with very familiar and real problems of the home and the community. It means starting civics with the policeman, the playground, the fire department, the natatorium, the parks, the collection of garbage, the cleaning of streets, the collection of taxes, etc., instead of starting it with an analysis of the principles underlying government. In English, the principle of realism demands larger emphasis on story, plot, and human interest and a delay in the emphasis on grammar and literary criticism. When we speak of starting with the concrete in our method of instruction, we must keep in mind this

double sense of the word concrete — one sense in which it stands pretty largely for things present to the senses as opposed to symbols, the other for that which is real, or relevant to *me*, as opposed to the formal.

Why and when emphasis falls on the abstract. — While the method of instruction must start with the concrete in order to insure grasp of meaning and sense of reality, it is equally important to remember that *it must get to the abstract.* We ought not to keep pupils weltering forever in the sea of the concrete. In the progress of science there is a continuous movement toward more and more abstract formulations. In the growth of experience there ought to be this same movement. To use ideas freely and effectively in thought processes we have to get them set free from the specific associations of experience. When we talk about an island we don't want the idea tied down forever to a particular setting of experience. The original experience with an island may have been with one that was covered with a grove where picnics were frequently held. Now, if every time we thought "island" all this detailed setting should flash into mind it might easily divert attention from the main function of the idea. We don't want thought switched off to groves and picnics, we want it focused upon a particular kind of land form. So it is with the idea "heat" in physics. We don't want it to carry with it at all

times the fringe of associations that shall make us think inevitably of particular experiences with fireplaces, stoves, bonfires, and August weather. We want the idea to carry only that meaning which is necessary for our scientific problem. The idea must be set free from its concrete setting and become symbolic. When we get away from our ordinary experiences with heat and see it from the angle of the physicist as a mode of motion, this abstract idea serves better the scientific function of interpretation and explanation of heat in terms of law. The power of thought is enhanced; heat can be correlated with light and electricity and its nature seen in a larger set of relationships, in a system of natural forces. The added power of thought that comes from the development of symbolism is readily seen when we compare arithmetic and algebraic processes. Algebra solves with comparative ease problems that arithmetic finds complicated and difficult. This same principle applies in every field of science; where abstract concepts, laws, and principles are attained, they give added power of correlation of fact with fact, stronger grasp of subject matter in its wider relations, a more fundamental basis of interpretation and explanation, and a tremendous increment in both intellectual and practical control of the fields of experience concerned. The practical achievements of the last half century in the invention of bicycles,

automobiles, electric lights, telephones, wireless telegraphy, moving pictures, graphophones, electrically propelled vehicles, and hundreds of other things that contribute to the convenience and comfort of life all rest back on abstract formulations of mathematics and science. The attainment of laws and principles in these fields made it possible to get back at reality from new angles and with added power of control over things and forces of nature. Progress in medical science and practice, in mental hygiene, in sanitation, in social and industrial organization is dependent on the same law of advance from the concrete to the abstract and the return of the abstract upon reality with an added grip. From this point of view, methods of education that fail to develop the power on the part of the pupil to reach the fundamental abstract ideas in the great departments of study and to use them intelligently have failed to put him in command of the tools of modern life. It is a vicious thing to emphasize the concrete in education if that means stopping there permanently. The principle of method is to begin with the concrete and push on to the abstract. There must be continuous reconstruction of the experience of the pupil, involving larger and larger control of the symbols that give power to thought.

Relationship between abstract and concrete in use of textbooks.—There is another problem of method that is

concerned with the maintenance of right working relationships between the concrete and the abstract when we are compelled to use textbooks. The materials of education as they are formulated in our textbooks abound in symbols derived from, and characteristic of, adult thought perfectly intelligible to us. We need to be on our guard against the process of merely imposing these symbols upon children for whom they do not necessarily have meaning. It is so easy apparently for children to memorize words, definitions, and technical terms in reading, geography, arithmetic, science, and other subjects that we fail to realize that what they get may be a mass of meaningless symbols after all. They may even bring under control rather complex processes in arithmetic, grammar, and algebra and still be doing nothing but cleverly juggling with symbols. It is instructive to the young teacher to inquire into the understanding of the average city class of children when it comes to glibly reading about wheat, dairy, plow, harrow, etc. It will doubtless give something of a shock to find that for many of the class these are mere words. Such symbols have no value if they cannot be translated into some sort of meaningful equivalents. We adults can take such abstract and technical terms as balance of trade, tariff, exponent, patriotism, molecule, bilateral, etc., and construct particular situations to which they apply. It is because of this fact that they

have meaning for us and can contribute to our thought processes. But to transfer these terms to children without developing any background of concrete experience from which they shall derive their meaning is to leave them in their consciousness as untranslatable symbols. It is this thing more than anything else that kills the power of thought. It has been experimentally demonstrated that a large part of the errors of children are due to failure to get meanings rather than to the difficulty in thought processes involved. In other words, these errors are due to a difficulty in reading, in interpreting symbols. The difficulty has centered in the lack of power to translate the abstract terms of the problem over into more concrete and familiar terms. Any one who has ever taught arithmetic or algebra has seen the truth of this again and again. The solution of most of the problems is relatively easy as soon as it is perfectly clear what the language in which the problem is stated actually means, particularly as soon as the pupil can construct mentally or practically particular concrete situations which this language symbolizes. The method of instruction must be such that there will be given abundant practice in the weaving to and fro between the concrete things of familiar experience and the abstract ideas essential to the higher thought processes. By this is meant that concrete situations must be studied which are summarized and expressed

in terms of the more compact symbols of thought, and again these symbols must be repeatedly translated back into the concrete situations for which they stand. Thus the abstract symbols become free and flexible means of expression of real thought, and they get the tang of reality and familiarity which makes it unnecessary to go back to the more primary experiences in order to understand.

From the psychological to the logical.

Meaning and nature of the psychological and the logical. —The distinction between the psychological and the logical is a very important one for education. So far as it concerns method, we are interested in methods of logical organization of subject matter and in methods of logical thinking. To what extent, and in what ways, can we train pupils to be logical in either or both of these respects? To be perfectly clear as to the nature of the problem, we shall need to explain what we mean by the distinction between logical and psychological.

In general, psychology is interested in the entire complex of mental processes — intellectual, affective, and volitional — that it finds in the actual working of the mind in any case under analysis. It tries to find out what goes on, and what are the laws of mental action that will explain what takes place. Logic is

interested in the mental process primarily from the angle of the intellectual activities, and in these from the point of view of their efficiency in getting the truth and exhibiting it in systematic form to others. In a sense of the word logic is a special phase of psychology, the study of the intellectual activities critical of themselves. There is no conflict, then, between the psychological and the logical; they represent different aspects and stages of the same experience. They are related to each other as the cruder, less specialized, and less finished products of mind to the more refined, more specialized, and more finished. Professor Dewey [1] has suggested a very interesting analogy which will help to clear up the distinction between the psychological and the logical and also to show their relation to each other. He suggests that we liken the psychological aspect of experience to the activity of the explorer and the logical to the activity of the same man when he is making a map. In the latter case, he is checking up and organizing the more primary experiences with reference to their meaning, significance, and the relationship of the results of his exploration to one another. The map is very different from the actual experiences, facts are not shown there in the order or in the relationship of their discovery, they are exhibited in their relationship to one another.

[1] Dewey, "The Child and the Curriculum," pp. 25, 26.

The map indicates none of the wanderings and retracing of steps of the explorer; it is simply a summary of results achieved. The map is objective and universal; the exploration was subjective and personal. What is true in the case of the map is true quite generally of all the finished products of human activity. The relationship of the parts to one another in the electric lamp, in the automobile, in the wireless telegraphy outfit indicates little as to the actual processes, either mental or physical, of their inventors in perfecting them. It is only the final organization that we see. In the solution of an original theorem in geometry there may be very complex processes of mental activity, involving much trial and error, many windings and turnings of the mind; the finished demonstration shows only the results in the necessary relations of one set of facts to another. It is, like the map of the explorer, only a summary of that which was significant. It exhibits ideas and their relationship to one another not in the order of their original experience, but only in their relationship to one another in a clear-cut and convincing proof.[1] The child who plays much in the garden, in the field, and in the forest will learn a great many things about flowers. But what he learns will lie in his mind connected by the ties of association that were peculiar to his own experience. If he becomes a botanist

[1] See my "Psychology of Thinking," pp. 139–141, for a detailed illustration.

later, this psychological organization of knowledge will be reconstructed in terms of the relationship of the facts to one another in the light of principles of plant growth and development. The subjective element will vanish; the final organization will be objective and indicate little or none of the actual processes of experience through which the facts were gained.

All of the illustrations that we have used indicate that there is a distinction worth noting between the psychological and the logical aspects of experience, and at the same time that the two are related to each other. It is particularly important to note that the logical is an outgrowth of the psychological; it presupposes more primary experience upon which it rests. For the people who make the logical organizations of facts, their whole meaning and significance rests back upon the fact that *they are organizations of their experiences.* The various textbooks used in our schools in arithmetic, geography, history, science, and other subjects represent summaries of experience along certain lines; they have meaning and significance to their authors in so far as they represent the solutions of their own problems. In marshaling the facts and organizing them into textbook form, they went through long processes of sifting, selecting, judging, and relating facts to one another which do not appear in the text-

books. The textbooks are the solutions, or finished products; they represent the logical aspect of preceding experiences that we would call psychological.

Real value of the textbook.—Since we are more or less obliged to use textbooks in the schools, the question of method of their use becomes significant as soon as we understand that they represent a different order of experience from that of the pupil. We have to ask, What is the value of this logically organized material? and how does it get meaning for the pupil? If we return to the analogy of the map, we shall get some very fruitful suggestions. The map of New York City would have no value for the average Hottentot. He has had no first-hand experiences of city life that would make its symbols intelligible to him. There is no basis in the psychological order of his experience for the grasp of the logical. Still further, his interests and his problems are not developing along lines that lead to any need of this kind of charted experience. It is all remote from his life. But, let the traveler from Paris come to New York, and the map of the city will have very great value for him. If it is well made, it will indicate to him many of the things that are most worth seeing. He can find this out without going through all the trouble of wandering around the streets and discovering for himself what are the main points of interest. Doubtless there is much satisfaction in this

kind of sightseeing, but it is also very wasteful of time and energy. When he has determined the points of interest from the map, then he can take the shortest and most direct routes to them. The map indicates the relative positions of these points to one another; he can consequently determine in advance his course from any point to any other and make sure of reaching his destination. The map, of course, is no fair substitute for the actual experience; the visitor from Europe certainly would not be satisfied with just a map. It is of value to him only in so far as he is a seeker of actual experiences. It then guides his judgment as to what is significant and enables him to find it in the least possible time. Now, the logically organized subject matter of the school textbooks has value and significance to our pupils under exactly the same sort of conditions that a map or a Baedeker's guide does to the traveler. If the pupil's experience is already moving in the direction of satisfaction of certain vital interests, if he is really trying to get somewhere, organized subject matter that will help him to know what is most worth while and that can be used to shape his course more economically has great value. It is then not something imposed upon him arbitrarily from without to be learned and recited; it is rather something that helps him to enrich, reconstruct, and organize his experience. It is from

this point of view that the doctrine of motivation, stimulation of needs, and utilization of projects and problems becomes so important. The psychological background of experience is laid which makes the organized bodies of scientific knowledge useful and necessary in the life of the pupil.

Problem of the right use of the textbook. — To come back specifically to the problem of method, we might say that there are three different modes of procedure in the use of textbooks. One of these is to impose the logically organized material upon the pupil directly as something to be learned in the hope and expectation that it will be useful to him sometime later. If our analogy of the map holds good, this is condemned at the outset; it would be like asking the Hottentot to study the map of New York City when he had no experience of city life on the one hand, and on the other no thought or purpose of his own of leaving his native wilds. A second method of procedure is to "psychologize" the subject matter. This means to take the material of the textbook as a guide for teacher and pupil, but not expect the pupil to learn it until it has been reconstructed in terms of the child's experience. For example, the teacher has reached the point in regular order of the text for teaching the table of linear measure in arithmetic. He does not ask whether the pupil has any use for this table now. It

is there to be taught. But he will not merely superimpose this knowledge upon the mind of the pupil. He will psychologize the subject matter. He will call up all the experiences that children have had with feet, inches, yards, etc. If these experiences have been lacking or meager, he will supplement them and develop them. He will not necessarily teach the facts of the textbook just as they stand, he will select from them certain that he can relate best to the experience of the class and later relate the others to these. After considerable reconstruction of the subject matter, he may finally teach the table and drill upon it until it is mastered. In like manner, one would psychologize the subject matter of the lesson in geography, in grammar, or in history by relating it as carefully and fully as possible to the more primary and familiar experiences of the class which would make it meaningful to them. This method of procedure would employ the well-know Herbartian doctrine of apperception. It is a great advance on the first method of teaching. The third method of dealing with the logically organized subject matter of the textbook would differ from the other two primarily in the fact that it would start with the experience of the pupil instead of starting with the subject matter of the textbook. The first question is not, What is the next lesson in the textbook? It is rather, What is the state of the present experience of

the pupil? What are his needs? Then we ask, What subject matter can I find that will satisfy these needs? We try to confront pupils progressively with situations that make them conscious of new needs, that make certain facts and bodies of facts necessary for them. Resort may be had to the textbook to find the facts in a convenient form for the solution of problems, or to find the answers to questions that arise. To take the illustration of linear measure once more, no attention would be paid to the textbook material until such time as the projects of manual training, of domestic science, or some other form of activity, had created situations calling for the use of the measures foot, inch, yard, etc., and had given preliminary concrete experience of their meaning and value. Such experience soon makes it evident that it would be more convenient to have these measures under thoroughgoing control for more effective use. Then the organized material of the textbook becomes significant, useful, valuable. There is here no problem of psychologizing subject matter, no special problem of apperception, because subject matter is not being imposed upon an unready mind, but rather being sought to meet a real need at a time when it is relevant and meaningful. The movement has been up from the experience of the pupil to the subject matter which is needed in the reconstruction and development of that experience, in-

stead of being from the subject matter to the pupil. To use the analogy of the Baedeker's guide once more, just imagine a situation in which you are yourself about to make a trip to Paris. You want to go there to see the sights of interest, to study works of art, to visit the schools and universities. The Baedeker is a source of organized material suited to your purposes. Imagine how eagerly you would read it as contrasted with your attitude toward the same thing before you had any idea whatever of visiting Paris. If we could only have that sort of attitude toward, and interest in, the subject matter of the curriculum of our schools, the ideal of educational method would be realized. I am not so visionary and impractical as to suppose that this is possible under all the actual conditions of school work; but it is the goal toward which we strive in educational method. It is an ideal which we approximate when we conceive of the logically organized subject matter of our school studies as the remote goal of the evolving experience of pupils — a goal which is reached only through continuous reconstruction of the actual experiences of children. The problem of method, from this point of view, is not so much that of psychologizing subject matter as it is that of finding subject matter that is adapted to the needs of the pupil and of training him in the processes of discovery and use of such material for himself. Methods

of teaching then become the counterparts of good methods of studying.[1]

Problem of training in logical thinking.

The other problem of method inherent in the relation between the psychological and the logical is that of training pupils in so-called "logical power." This is more properly conceived, according to current psychology, as the problem of training in the *methods* and *habits* of logical thinking. It has been commonly thought in the past, or carelessly taken for granted, that the study of logically organized material gave the training in question. Going through the logical formulations of grammar and of geometry was supposed to give training in reasoning. But, if our analysis is correct, the real logical power involved in the map-making of the explorer and in the solution of the theorems of geometry was displayed by the one who successfully organized his own experiences and put them in the compact and thoroughly related terms of the chart or the demonstration. To do these things required logical ability and command of logical methods of organization. If we attach any significance at all to the laws of habit-formation, we cannot expect pupils to possess such logical ability or to exercise competent control over logical methods without first going through the activities

[1] This is the point of view of McMurry's "How to Study."

for themselves of perfecting through repeated experiences more and more the logical organization of ideas and of mental activities. No amount of superimposing the finished forms of grammar, of geometry, or of inductive science upon the minds of pupils can train them in the actual reasoning processes. Here, at the best, they are only following the thought of another, not thinking for themselves and learning how to organize and control their thought processes to better advantage. One does not necessarily make his own thinking more logical by going through the final processes of another's logical thinking. Only by going through the struggle of organizing his own ideas can he learn the methods of attack and of solution of problems that we call logical; and only in this process many times repeated does he develop the logical habits of thought.

There is little doubt that the power of logical thought and logical organization of material is relatively later to develop than the psychological. But we must be careful to understand that there may be a logical element even in the thinking of the little child. The main consideration of method is that the logical be not forced ahead of the more primary experiences on which it rests. In the field of the familiar, there is no reason why the young pupil should not learn to judge what is relevant to certain purposes, to select wisely the facts needed, and to organize them in such a way

as to make them effective. While he may not give the same sort of an organization as the teacher would, nevertheless it may be an organization that is not wholly haphazard. He may write his composition with an eye to the effect that it will have upon the reader or upon the class when it is read. If he does so, he cannot simply ramble on and on cataloguing facts about his experience on the farm. He must reconstruct his original experiences, leaving out some, selecting others, amplifying some, slurring others, and putting some in sequence that were widely scattered. He must organize the results much as the explorer organizes the results of his explorations in making a map. So it will be with his nature study experiences; they must not be left to lie in his mind in just the order and in just the setting of relationships in which they were experienced. Little by little the relationship of facts to one another must be seen in the light of principles. The stories of history lead to the study of the relationship of events to one another and to the problems of social life of an age and the progress of civilization. New connections are constantly being established, and subject matter reorganized in the light of principles of historic development. Both logical power and the methods of logical organization grow gradually out of the sifting, judging, relating, and organizing of the more primary psychological experiences.

From self-expression to art appreciation.

Genetic basis of appreciation.—Until recently almost all discussions of method in education ignored the element of appreciation. But the enjoyment of music, painting, sculpture, literature, and other forms of art is a very real part of complete living. Every one has a right to some cultivation of his power to appreciate the finest and best things. This power may be more satisfying for more years to most people than many of the other things that we stress in school. By what methods can appreciation be developed? Both racial and genetic psychology seem to agree that the basis of art expression is to be found in interesting experiences which kindle the imagination and stir the emotions.[1] The tendency is natural to reproduce such situations in some form that will objectify the imagery and get the emotional thrill again. Primitive men thus celebrated in dance, pantomimic gesture, song, story, drawing, and carving the thrilling experiences of the hunt, of war, of the inauguration of a chief, etc. Wherever balance, rhythm, and harmony were hit upon they enhanced the emotional effect and later came to be recognized as special elements in the technique of art. One of the primary functions of such art expression which tended to favor its evolution was the social contagion of emotion,

[1] See Dewey's Article on Art, in the "Monroe Encyclopedia of Education."

with its unifying effect. Hence the festal element was especially prominent in primitive art. It is also an element that appeals strongly to children. One of the most interesting of all classes of experience are the free creative activities. God himself is represented in the first chapter of Genesis as looking repeatedly upon his creative work as it unfolded and seeing that "it was good." There was an evident thrill of satisfaction in beholding the work of his hands. This is equally true of the creative activities of human beings; it is especially noticeable in the life of little children when they achieve any new thing. The baby who stands alone for the first time is likely to grin from ear to ear and to want to repeat the act at once and have it noticed by others. The same is true of all sorts of achievements. How often the child runs to mother or to the teacher to show what he has done with his blocks, with his pencil, his paints, or his tools!

Application to methods of teaching.—We have in the few principles of psychology just enunciated the basis for the formulation of the methods of cultivating art expression and art appreciation. Here, again, it is not through imposing finished products upon the pupil for his admiration that art appreciation grows. The root of the matter is in his own activities. He must first go through experiences that kindle his imagination and stir his emotions until he

cannot help expressing himself in some form of creative activity that shall objectify his images. It does not matter at first that the form of his expression is crude and unartistic, if it is really his own in response to the vivid image and the feeling that press for release. If he gets the joy of achievement and gloats over what he has done, there is the beginning of real appreciation.

It does not matter from this point of view whether the thing made is primarily useful or primarily ornamental. The psychological effect is the same; he has gone through the vital experience which serves as the basis of appreciation. When appreciation has adequate basis in actual thrilling achievement, we know that it can then run way beyond the power of the individual himself to produce art products. But, in all the fundamental lines of appreciation, it is more important at the outset that the child undertake to express in some form the experiences that have kindled his imagination than it is for him to be surrounded with art objects to be imitated or admired. It is more important that his free creative tendencies be released in channels of actual satisfying achievement than it is that he be taught about the fine points of art. The rule of function first and the gradual introduction of technique holds good. Feeling and imagination must be cultivated as the basis of appreciation, and there is no more fundamentally vital feeling than that of achievement

of some sort. It is from this point of view that we have the basis also for the cultivation of appreciation in the broader sense of the word as applied to mathematics, science, history, and to social and moral situations. Where there is progressive achievement in any of these directions, there appreciation is likely to develop and be strong. To the lover of mathematics, nothing is more beautiful than the finished, perfect convincing demonstration in geometry. To the scientist, there is admiration for every new discovery or invention that is the fruit of scientific research. Education should be concerned with appreciation of this sort as well as with art appreciation. The principles of method are the same here as in art. Appreciation must grow first out of self-expression and creative activity.

The finished products of art produced by the great masters are, of course, of great value. Their use should be cultivated even beyond that which now prevails. Their presence tends to refine sensibility unconsciously and in this way to modify standards. And at many points in the progress of the pupil, they may suggest ideas of order, arrangement, symmetry, harmony. For this purpose, however, their place is at the point when the pupil is ready for constructive criticism and improvement, or when he has gone far enough in art expression to lay the basis of the more assimilative type of appreciation.

Summary

Method is an organization of processes for more rapid and efficient attainment of ends. Methods of teaching are not properly inventions of the instructor, but rather discoveries of the best methods of learning and an organization of all the resources that will facilitate normal learning processes. Intelligent formulation of methods of teaching depends on an understanding of the fundamental natural educative processes. The most important of these are the following: self-activity, reconstruction of one's own experience, enrichment, development, and control of experience. It is through these processes that the child normally brings himself into learning situations, profits by his experience, and makes it effective in meeting his needs. If instruction is to take its cue from normal learning processes, these determine certain principles of teaching. Instruction must begin by diagnosing the situation to discover the needs of the pupil and the resources at his command for meeting them. The pupil's effort will depend on securing adequate motivation. To this end, instruction must seek to make him conscious of his needs, and the teaching process must draw upon the sources of motivation to be found in the pupil's instincts and natural tendencies, his habits, ideals, and interests, practical situations calling for action, and the natural outreach of his mind as expressed in curiosity, imagination, and the challenge of problems. The use of projects and problems relevant to the pupil's experience is likely to furnish motivation and at the same time provide the types of situation that call forth all the essential learning activities. The normal learning process involves the performance of a function, motor or mental, to meet some need. Hence teaching should regard the performance of function as primary; technique is introduced gradually and emphasized as a necessary phase of improving functions and bringing them under better control. Closely associated with this principle is that of making the transition gradually from the concrete and real to symbols, abstractions,

and generalizations. The progress of the pupil should be marked by a very gradual transition from the psychological, or spontaneous and natural, mental activities to those which are more thoroughly controlled and logical. Appreciation comes first through self-expression and free creative activity. Observation and imitation of art objects, or models, can facilitate growth in appreciation only where such growth is already naturally under way.

Supplementary Readings

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CHAPTER VI

THE TEACHER

What is the function of the teacher? Is it to impart knowledge and to give training? Or is it to facilitate normal learning processes and help children meet the needs of life? Why must teaching become a profession rather than a trade? What elements enter into the training of the teacher — what requirements of scholarship, of knowledge of fundamental sciences, of specific professional studies? What is personality? What qualities of personality are necessary in teaching? Can personality be improved? Can we apply principles of vocational guidance in selecting candidates for training to teach? What is the supervisor's part in making successful teachers? How can teachers in service continue to grow and keep pace with the changing needs of the profession?

The Function of the Teacher

The child learns without the aid of any teacher. By a law of his nature he is continually reacting to his environment. He responds to situations which confront him and thereby discovers what things satisfy him and how he can get them. His reactions become progressively more selective and his behavior is being

continuously reconstructed in the light of his experience. From the people by whom he is surrounded he is constantly getting hints as to what things are worth while and also as to methods of procedure that will gain him his ends. These suggestions he tends to adopt and thus facilitate his learning process and short-circuit the acquisition of control. He picks up language, the elements of industrial processes, ideas, standards, methods of thought of the world in which he finds himself. Whether among primitive people or in civilized communities, a large part of the child's learning is of this incidental sort. Such learning is exceedingly vital. It is bound to reflect the needs and interests of the learner. What he learns fits into his experience and is learned at the time and under the circumstances that it has value for him. Thus the Indian boy learned the use of bow and arrow and the secrets of woodcraft; thus the Athenian adolescent learned the duties and the practice of citizenship and absorbed the higher culture of the age; thus the American boy of the near past learned farming, business, and the trades. The method was that of observation, participation, and imitation, which was supplemented in some cases with incidental instruction. Not only does such learning tend to be relevant to the needs of the learner but also to keep in close touch with the real world of human activities and interests. Its social reference is almost complete.

If a teacher is brought into relation with the learning process, what more can be done than is already done? under what conditions? and in what way?

When life was simple almost everything that was worth while could be learned through direct observation and participation; the child shared in the life and activities of the home and the community. Parents exercised a certain measure of control over the child's learning then as now by approving, rewarding, or punishing certain modes of behavior in the light of their superior insight and accumulated wisdom. Social approval and disapproval were also powerful in their influence on his ideas of values and the best methods of realizing them. But the home is a center for a great many other activities besides those of rearing children; hence the guidance and direction which it gives to their learning processes is apt to be fitful, spasmodic, and uncertain. And the influence of the social environment is even less intentionally exercised. As life becomes more complex, needs become more numerous and the social and industrial processes which meet them become more specialized and remote from the possibilities of early observation and participation on the part of the young. Under these conditions the incidental and unintentional learning activities prove inadequate. The teacher and the school become necessary. The learning of children needs more definite,

continuous, and intentional guidance than can be given by the home. Hence we have the specialized vocation of teaching. The teacher becomes the representative of the home and of society in the superior guidance and direction of the learning processes of children.

It is the contention of the functionalist that the teacher introduces no new element into the educative process except that of guidance. It is in this factor that we see the function of the teacher. He is not a master or an instructor in the ordinary meaning of these terms. We have seen that the normal learning processes of children tend to be relevant to individual and social needs; they are real and vital. In introducing guidance and direction, we do not want these characteristics of learning to be displaced. The teacher is not to meet the child's needs for him but to help him to meet them himself. He is not merely to pass on, or transmit, knowledge, but to utilize the child's natural tendencies to activity in such ways that he will be confronted with situations which make knowledge necessary. He is not to train the child like a dog in habits and skills but to make habit formation and the perfection of skill a phase of the process whereby the child meets his needs more efficiently. This is very different from assigning lessons from textbooks and hearing children recite what they have memorized; it is very different from the stereotyped drills of the

traditional school. It calls for a higher order of intelligence and a superior type of skill. It requires an intimate and exact knowledge of the principles of child growth and development, a sympathetic and tactful insight into what is actually occurring in the unfolding lives of pupils, and a breadth and plasticity of knowledge of subject matter and materials of education far beyond the routine familiarity with the prescribed textbook. The teacher is a diagnostician, a leader, an inspirer, a guide of children. He helps them to short-circuit their learning processes and perfect the methods of meeting their needs. He introduces them to new forms of experience that they might not hit upon by chance. He sees to it that in living fuller and richer lives, they are also becoming better equipped to play their part in the larger world of human interests and activities.

It is evident that the rôle of the teacher is not an easy one. The task is no longer one for amateurs. From the functional point of view it becomes increasingly important to ask who are fit to enter upon this vocation. What sort of people shall be designated to perform this social function? What qualities shall they possess? What training shall be required of them? The answers to these questions may be approached by raising another question with which they are bound up, namely, Is teaching to be regarded as a trade or as a profession?

Teaching as a Profession versus Teaching as a Trade

Characteristics of a trade.

A trade tends to specialize in a rather narrow range of activities. This can readily be seen by inspection of any one of the building trades, such as carpentry, masonry, plumbing, etc. In the matter of knowledge no one of these trades demands more than a rather detailed idea of means, processes, and customary rules of procedure that pertain to the craft in question. There must be sufficient intelligence to follow the directions and specifications of superiors. Also there has to be a reasonable degree of skill that has come from practice. The carpenter must know the use of the hammer, the saw, the plane, and other tools of his craft and he must have reasonable skill in their use. He must know what to do and how to do it in such processes as shingling a roof, laying a floor, putting timbers together, etc.; and he must have a proper degree of accuracy and rapidity of control of these activities. In like manner, the activities of the mason, the plumber, and the painter move within a narrow range, calling for a limited amount of special knowledge, and demanding a somewhat specialized skill in the control of the processes involved.

Characteristics of a profession.

A profession like that of the architect, the physician, the engineer, or the journalist deals with a more complex situation involving a wider range of activities. It calls correspondingly for the mastery of more fundamental types of knowledge and for less of merely routine skill. It calls for more initiative and originality. While there are certain routine processes in all house-planning, nevertheless the architect is continually dealing with a large range of variability. Houses vary in size, in number of rooms, in art qualities, in adaptation to function, in cost, in materials of construction, and scores of other respects. The architect has a very complex problem of adjustment of means to ends to be solved in practically every plan that he draws up. In a sense of the word, the house has to be, like the hat or the dress of the fashionable woman, a creation, a dream, a poem, not merely the reproduction of something else. The architect has to be able to analyze situations, to think them through, to work out complex and highly interrelated modes of procedure in advance that shall nevertheless all fit together perfectly in the accomplishment of specific purposes. To do this he has to have a wider range of knowledge than that of any member of any of the building trades, and he has to have a grasp of the principles of several sciences which

will give him the power to interpret and correlate one fact with another. No amount of rote knowledge, however thoroughly under his control, no amount of mastery of rules and formulæ, even associated with marked skill in drawing, would be sufficient to make an architect.

Teaching as a profession.

The difference between a trade and a profession is the difference between following rules that are given and utilizing principles in the construction of a method adapted to the specific case in hand. Under which head does the vocation of teaching fall? If teaching is a type of activity which is limited to the carrying out of directions or the following of specifications, calling only for a knowledge of means and processes, and requiring preëminently skill in the manipulation of schoolroom processes, then certainly teaching is a trade and not a profession. It must be confessed that under some systems of supervision teaching has little chance to rise above the level of a trade; and it is equally true that there are some teachers who would prefer to have their thinking done for them and to be left responsible only for the manipulation of certain prescribed processes. Where the attempt has been made to reduce teaching to the status of a trade, the work of the school has been so completely mechanized

as to lose its vitality. It is coming to be seen more and more clearly that supervision does not mean substituting the intelligence of the superintendent for that of the rank and file of the teaching corps, but rather the expert guidance and direction of that intelligence, the right focusing of it upon the problems of the schoolroom. No matter how fully the more complicated and far-reaching problems are taken over for solution by special officers of supervision, there is always an irreducible minimum left for the classroom teacher that requires the use of his own intelligence in a more constructive way than in the case of a trade. In a sense of the word the teacher is always doing something unique, something that has never been done before in the same way. He is dealing all the time with a complex set of variables. He has to make repeated diagnoses like a physician, and he has to plan for new situations like an architect. From this point of view the vocation of teaching should be classed as a profession. The teacher must be not merely a master of routine but also a master of crises. What sort of persons then shall be chosen for this profession? and how shall they be trained? We shall take up the second of these questions first.

The Professional Training of the Teacher

The assumption that teaching is a profession rather than a trade implies training in all those subjects which furnish the underlying principles of the teaching art as well as preliminary practice before entering upon the duties of the vocation. The teacher must not only be able to do specific things when required, but must also understand why they are to be done. The understanding of reasons which lie back of modes of procedure must be so complete that he can solve many of the problems which confront him for himself and devise methods of his own for dealing with them. To reach this level of art in teaching training along three lines is necessary: (1) a group of studies which insure scholarship, (2) a group of pure sciences which lie back of educational theory, and (3) a group of strictly professional studies, supplemented by directed observation and practice teaching.

Scholarship.

The teacher stands in a special relationship of obligation to society which makes more than average scholarship necessary. He professes to know certain things well enough to teach them to others. If he were to become a tailor, it would not be essential that he know a great deal about geography, history, arithmetic, etc.

We believe that the tailor is apt to be a better citizen for training in the common elements of our civilization. But if he is lacking, or not up to the average, in these respects, he may be just as expert in his vocational work. So long as he makes good clothes, he is not defrauding his patrons by virtue of his ignorance, or lack of scholarship, in the common branches. A ready command of the mother-tongue is a good thing for any one, but a carpenter who uses incorrect English may earn his wage just as fully and defraud nobody because of his inability in English. But this is different with the teacher. He is being paid explicitly for his knowledge and skill in these branches of instruction which he professes to teach. He cannot earn his wage fairly and fully unless he has under superior control the bodies of knowledge essential to the pursuit of his craft. We call the physician who practices without an adequate knowledge of medicine such ugly names as impostor, charlatan, quack. We call the men who sell stocks that have no value crooks and swindlers. The teacher who professes to teach arithmetic, geography, Latin, mathematics, science, or other subjects when he knows no more about them than the average person is just as guilty of defrauding society as the quack in medicine or the stock swindler in business. It is pitiful to see men and women in prosperous and enlightened America permitted still in some cases to go

out to teach the common branches with a child's knowledge of arithmetic, English, geography, and other fundamental subjects. In some cases it is even worse than a child's knowledge; for it has been supplemented with four years of forgetting these subjects while pursuing a high school course. It sometimes happens that to this four years of forgetting are added two more in the normal school, where the organization of its curriculum does not require the student to review these subjects in some form before taking a diploma. It stands to reason that the person who is to teach any one of the common branches ought to be required to have a more thoroughgoing understanding of it than that which was acquired before the age of fourteen years. The same principle applies to the prospective high school teacher. His grasp of such subjects as Latin, history, physics, etc., ought to be firmer and more secure and more far-reaching than that which characterized his work as a student of these subjects in high school.

We may well ask what principles should determine the degree of scholarship essential to teaching. It always ought to involve academic specialization in the particular field or fields in which teaching is to be done. The elementary school teacher ought at least to review and intensify his knowledge of the common branches. To go over them again in the

same way that they were studied in the first place is not adequate. The new study should give a wider and a more fundamental view of the subject matter. His knowledge of it should be intensified. Perhaps this kind of review is best conducted in connection with the problem of teaching the subject in question. In this case it becomes absolutely essential to get a different view of the subject matter from that which was acquired in childhood. The whole subject has to be canvassed anew with reference to the kinds of material that are available, their adaptation to use at different stages of development, and the methods of organization that are best for teaching. For the teacher in high school or college the same principle applies. He has no right to assume that he can teach a subject just because at some time or other he has himself studied it in an institution of learning. The teacher must have a more fundamental, comprehensive, and flexible control of the subject matter than he got at the level of his student life.

Adequate scholarship for the purposes of teaching must go beyond the subjects to be taught and take account of those also which are intimately related to them. The teacher of such a simple subject as that of primary reading is not equipped for her task simply because she is a good reader. To teach reading well, particularly from the functional point of view, she

needs to know thoroughly the sources of good material. The stories in the readers are often fragmentary in character. She cannot interpret them aright or supplement them with added relevant material without knowing a great deal about juvenile literature. Courses in Greek mythology, English folk lore, Indian life, nature study, and English and American literature all play an important, and often a decisive, part in her equipment. Rhetoric, dramatic reading, and history make a decided contribution. There is hardly any limit to the literary lines of study that may contribute to the efficiency of a teacher of reading in the lower grades. I have purposely referred to the lower grades as the extreme case. Granted here, the principle is even more applicable when it comes to the more advanced classes. Arithmetic is not fully comprehended by the teacher who has no understanding of algebra, geometry, and some simple sociology. The judgment of what to emphasize and what to neglect in the teaching of arithmetic is not trained except as arithemtic is seen in the light of its larger mathematical and social significance. This same principle holds with reference to the high school teacher of algebra and geometry. His training for teaching these subjects must include higher mathematics and the sciences and practical arts in which the mathematical element is important. If so much related material is necessary to the good teaching

of reading and arithmetic, how much more is this true of such a subject as geography in which are found the elements of all the sciences. It must be remembered here that it is not because the teacher will teach this body of related material to his classes that he needs it. In some few cases, he will draw upon simple materials and principles that serve illustrative or supplementary purposes. But the value consists in large part in the training of his judgment of relative values in the portion of subject matter which he does teach, and in his added power to make what the pupil learns relevant to the problems of life and of further instruction. It is no insignificant value of this wider training in the subject that it develops a professional interest and enthusiasm which grows out of the consciousness of mastery and the intellectual comradeship of others working in the same field of human progress. This is a most precious thing in the life of the teacher, and it is bound to influence his whole attitude toward and interest in his work.

Besides the scholarship that is involved in the mastery of the subjects to be taught and those which are intimately related to them, the teacher should have taken enough other subjects to make a well-rounded course. This is a requirement that will insure the attainment of the standards of culture that prevail among the well-educated and also make certain an intellectual

maturity considerably in advance of that of the pupils in the highest grade of the school in which he is to teach. This means that no graduate of the elementary school is fit to go back at once to teach in that school, and no graduate of the high school is equipped to go straight back into that school to teach. In neither case is there an adequate superiority of the teacher over the pupils in the matter of intellectual maturity. Intellectual maturity is not to be identified with chronological age. Time is undoubtedly a factor in it, but what we are insisting on is that kind of maturity that comes from further study and deeper insight into the subject matter to be taught and its place in the whole body of knowledge. Present standards in this matter now tend in the following direction: for teaching in the elementary school, six years of study beyond the eighth grade — four years in high school and two in normal school; for teaching in the high school, four years of training beyond that institution — a college course or its equivalent, together with pedagogical training during the course or in an additional year of work; for teaching in the college, three years of special training beyond the bachelor's degree — the equivalent of a course for the doctor's degree. While these standards are not firmly fixed as yet, the drift is decidedly in the direction indicated. City elementary and high schools very rarely depart from these standards in filling new posi-

tions. There is a growing tendency to insist also on some special training, particularly in professional lines, that guarantees to supervisors and superintendents a broader outlook than that of the teachers under their direction.

There is a tendency in some quarters to decry the factor of scholarship in the equipment of the teacher, and to put the emphasis on personality and method. There can be no doubt of the importance of these factors in the career of the teacher. But there is no justification for the supposition that they stand in opposition to scholarship. If personality and method are to get anywhere, they must have something to work with. Other things being equal the teacher who knows most about his subject, related subjects, and the world at large is in the best strategic position to use knowledge freely, flexibly, and skillfully in specific teaching situations. The fact that some great scholars cannot teach does not alter the truth that scholarship is the *sine qua non* of the teaching profession, it is the one thing that is absolutely indispensable back of and behind all methods and all personality in teaching.

Scientific background.

The physician who practices his profession has to be grounded in the fundamental sciences of anatomy, physiology, neurology, chemistry, etc. The architect

has to know mathematics, physics, chemistry, esthetics, etc. In general the principles upon which any professional activity rest are inherent in some body of pure sciences which the professional man must know in order to understand his art and to be adaptable in its practice. So it is with the teaching profession. Biology gives knowledge of the laws of physical growth and development and explains many of the inherited tendencies that crop out at different stages of development of the child. Psychology throws light on the nature of the mental processes and the conditions under which they are called forth to best advantage. Its study is essential to an understanding of the learning processes of children and the formulation of methods of instruction adapted to facilitate learning. Sociology or the social sciences give the teacher an insight into the world in which the child is living and for which he is being still further prepared. Only through such knowledge is it possible to select and adapt subject matter to meet the needs of the pupil and to serve the best interests of society. These three lines of scientific study seem to represent the minimum of scientific training for the teacher.

Where one pursues a longer course of training than that provided by the normal school, it might be advisable to add to this list the study of ethics, logic, and philosophy. Ethics gives a larger basis for the

understanding of the moral nature of children and would be suggestive in determining modes of instruction and discipline adapted to the culture of the moral life. Logic gives a better insight into the principles underlying the organization of subject matter in textbooks and also those which are essential in the testing of conclusions and judging of truth. Philosophy will be objected to by some on the ground that "philosophy bakes no bread," in other words has no practical value. One may very well concede that "philosophy bakes no bread" and reply that it is concerned with bigger things. It makes more profound changes in the world than that. The Puritans had a religious philosophy with which we probably do not now agree, but it profoundly influenced the conduct of thousands of men on both sides of the Atlantic and changed the aims and purposes of life on two continents. The democratic ideals of the American nation owe much to the political philosophy of the 18th century in France. Now, one's attitude toward life may be a very decisive factor in his teaching at very critical points. It makes a profound difference to the work of the instructor whether his working philosophy of life is crassly materialistic or whether it is idealistic enough to make him believe in the imperishability of moral and spiritual values. It makes a difference to his own interest and enthusiasm, and in what he selects for emphasis in his instruction.

Professional theory.

The architect does not solve all his problems as original exercises on the basis of his knowledge of physics, mathematics, and other sciences. In his work there arise many problems of the same general character, the solutions of which have been made once for all. These solutions and their results are organized into a body of applied science, or professional theory. When the architect has to determine the amount of radiation necessary to heat a room, he takes a formula from this body of professional theory and substitutes in it the dimensions of the room, thus solving his problem by the use of an equation applicable to many cases. So he would proceed also in determining the strength of materials to be used. There is something analogous to this in the procedure of every profession. The physician draws upon the formulated results of a great deal of scientific investigation in biology, chemistry, and anatomy. The applications have been worked out in general form for many diseases. He adapts these to particular cases. As an aid to the profession of teaching, many applications of the underlying sciences have been thoroughly worked out in the form of educational psychology, educational biology, educational sociology, educational logic, etc. The principles of the various sciences in their

bearing on education and many of the specific applications should be familiar to the teacher. His professional training is incomplete without them. They represent to him science in its most usable form for his purposes. Some study of current methods prepares the teacher to put into practice at once the best usages of the day in matters of classroom instruction. Some of these usages are alike for all subjects; the principles of motivation, interest, apperception, etc., being involved in the teaching of arithmetic and of music, of Latin and of science. But there are specific differences in modes of procedure adapted to different subjects; hence the teacher must study the special methods appropriate to the subject he is preparing to teach. The technique of instruction would be radically different at certain points for arithmetic and music; for Latin and chemistry. It is worth while, before beginning to teach, to know what this special technique of method is; it will save much unnecessary floundering around, even where general principles of method are known and also the science upon which they rest. The history of education has a professional value for the teacher. It gives an account of many educational practices in the light of their origin and shows how educational principles have been tried out in a wide variety of situations. Its study should contribute to the balance of judgment of the teacher through his added power to survey the

whole field of education in its relation to the forces which have shaped current methods and practices. Included in professional theory would be a certain amount of study of problems of supervision, administration, class management, school architecture, school hygiene, and comparison of curricula. This group of studies would be most necessary for those who are preparing for supervisory and administrative positions. At the same time, a brief survey of these topics with special attention to class management would be valuable for the teacher. The professional training of the high school teacher would not differ in principle from that of the elementary school teacher. The amount and range of work would vary, and the content and special emphasis of topics within the courses would differ considerably.

Organized and directed observation and practice.

The physician in training is expected to attend clinics for a year or more in which he has a chance to learn from the direct observation of experts at work, and from discussion with them, the methods and processes of diagnosis and prescription for the various classes of diseases that have to be treated in ordinary practice. It is becoming more and more common to expect him to go through a probationary period of practice in a hospital under the immediate supervision of skilled

practitioners. This point of view for the training of teachers in the elementary schools has been accepted for a long time by the normal schools. They take it for granted that an essential part of the training of teachers is to be found in practice under the direction of experts. The only criticism that can be passed on the normal schools at this point is that in many of them the practice teaching is not as well organized and directed as it ought to be. Practice teaching in and of itself is no guarantee of success. One may learn from it much that is bad as well as much that is good. To be an effective instrument of professional training it needs to be thoroughly supervised so that we can make sure that the right sort of habits are being formed. In many of the normal schools there is not a close enough correlation of the departments of psychology, education, and special methods with the training school. The pedagogy learned in one place is different from that which is applied in the other. This is very confusing and baffling to the student teacher. The departments of theory and of practice should coöperate, if they wish to make their work effective.

The principle of practice teaching in the colleges and universities, which are now claiming, as opposed to the normal schools, the exclusive right to train the high school teachers, is not yet fully recognized; but the movement for organized and directed observation,

including some practice teaching, is now well under way. An increasing number of higher institutions are taking up for serious consideration the problem of adequate practice for prospective high school teachers. The movement is comparatively new and the organization for effective practice is to be found in all stages of development from the most crude to the most efficient. A healthy interest in the possibilities has been developed, as is evidenced by the recent report of the Society of College Teachers of Education.[1] This report shows that there is a sad lack of facilities for adequate practice teaching in the college system of the country. It shows, however, that there is an increasing disposition on the part of the stronger universities and the better class of colleges to develop thoroughgoing systems of directed observation and practice teaching.

The Personality of the Teacher

If teaching is a profession dealing with very complex situations and calling for a high degree of scientific and special training, we must ask the further question, What sort of people should be selected for training as teachers? This brings us immediately to that qualification popularly called personality. What is per-

[1] "Practice Teaching for Prospective Secondary Teachers." This is an Educational Monograph, No. 7, in the series published by the Society of College Teachers of Education, 1916, The Torch Press, Cedar Rapids, Ia.

sonality? What personalities are adapted to teaching? Can personality be cultivated? It is commonly recognized that the good teacher has not only knowledge and professional skill but also the power to bring his influence to bear on others, the power to call forth responses from them that will result in their learning what he has to teach. There can be no question of the importance of personality. But what do we mean by it? In popular use it seems to be a vague and loose term to cover anything in the success or failure of the teacher that we cannot readily explain. Anything for which we cannot find assignable reasons we are apt to dump off on to personality. That is one of the dangers in the use of the term at all with reference to the qualification of teachers. The more or less mystical notion of personality interferes with the tendency to analyze carefully and discover precisely the factors in the native endowment and training of individuals on which success in teaching depends. The difficulty with the concept of personality is still further accentuated by the fact that we actually find successful teachers with widely divergent personal characteristics in practically every stage of the profession from kindergarten to college. There are those who are slow of thought, and those who are quick, those who are aggressive and executive and those who are personally shy and retiring, those who are imposing in personal appearance and those whose bodily

presence is so insignificant that one wonders how they ever succeed in getting the attention and control of a class. Because of this extremely wide range of individual differences among good teachers, it is very difficult to tell in advance of actual trial whether any given person will succeed in teaching or not; and we know that those who succeed in one type of teaching or in one class of situations often fail in others. Yet there are doubtless limits within which the qualities that make for success fall. Hence it is worth while to make an attempt at getting a more definite idea of personality and to analyze out the qualities and characteristics which are essential in a reasonably strong and effective personality.

When we think of personality it is always in connection with some influence which one person exerts upon others. The roots of this influence are to be found in the inherited qualities. These may, or may not, have been much modified by experience. The test of personality is the effect that the inherent qualities of the individual have on others. In so far as they have a high suggestive power in modifying the attitude and the behavior of others the personality is strong. We might take for a *preliminary conception of personality the inherent qualities of the individual functioning in social and ethical situations.* The inherent qualities of the teacher that determine personality

fall roughly into three groups: the biological, mental, and social qualities.

The biological qualities.

The biological qualities that lie back of the personality of the teacher are of two classes — the physical and the temperamental.

The physical. — The physical qualities include such things as height and size, native vigor or vitality, and the qualities of the voice. Throughout the larger part of the history of the race, size and strength have been big things in the determination of a man's success in life. The kind of situations which confronted men, both as individuals and as groups, were such as to put a premium upon physical force. Hence it has become an ingrained natural tendency to look up to, admire, and heed the big man. For this reason whatever he may have of social and ethical influence is made more easily effective than in the case of others. He has a decided advantage over them in the larger power of suggestion or social contagion of his acts and his ideas. Furthermore height and size attract attention; they single the man out from the mass so that whatever he may have of influence resting upon other qualities gets a chance to work. It might be added on the other side that the big man pays something of a penalty for his size in the larger popular expectation. If he does not meet this

expectation, his failure is all the more impressive. For instance, there is nothing more pathetic than the failure of a big man in a public address. Native energy, or physical vitality, is a factor in personality regardless of physical bulk. It backs up whatever other qualities a man may have that carry weight by intensifying them and making them persist until they are felt. In the voice, many people have a very strong and subtle power to influence others. Even wild animals heed and respect the firm, deep, tense voice. Children are drawn, without knowing why, by the soft, mellow, sympathetic voice. Most people are irritated by the high, rasping, nervous voice, and it takes very positive drawing qualities to overcome the handicap which it imposes on its possessor. Little attention is given to the directions of the teacher who uses a timid and questioning tone of voice.

The temperamental.—We do not know very much that is scientific about inherited temperaments. No exact statement can be made about them, though it is customary to point out four classes of temperament. The sanguine temperament is easily stimulated, quick to react, and optimistic in disposition. Those who are of the phlegmatic type are less easily stimulated, are slow and steady in response, and careful, cautious, and reflective in disposition. The person of choleric temperament is easily stimulated, more violent and

intense in reaction than the sanguine, and more emotional and unstable in disposition than the phlegmatic. The melancholic type is like the phlegmatic in being slow in response to stimulus, but it is weaker in reaction; and in its disposition is more emotional and less persistent. It is readily seen by the most casual observation of one's acquaintances that these four types of temperament are not fixed; the vast majority of people approximate one of these types in some degree while manifesting certain other traits also. Other types might easily be added to the traditional four. In modern American life, it seems that we have a real need of recognizing at least one more, namely, the nervous type. There are people who by virtue of their inherited constitution are high strung, easily stimulated, quick to react, and excitable in disposition. Men and women of all these differing temperaments succeed in teaching. It is in the extremes of temperament that the difficulties arise. The teacher may be too sanguine and optimistic to exercise the necessary critical and practical faculties. He may be too choleric to exercise the self-control necessary to the teaching profession. He may be too phlegmatic to be adaptable to the rapidly changing schoolroom situation. If he is of an extreme melancholic type, he is likely to let things drift too much and not use his energy to advantage in directing the activities of the class. The

extreme nervous type reflects its own excitability to the whole class. Besides consuming his own energy in dangerous waste, he is apt to confuse the normal educative activities of the children under his control, if not to produce a condition of positive disorder. In matter of temperament, the good teacher may be expected to possess those qualities which contribute to alertness of attention, ready self-control, evenness and steadiness of disposition, optimism within practical limits, and enthusiasm (not merely effervescence[1]) in the pursuit of his calling.

The mental qualities.

The special mental qualities which enter into the personality of the teacher are classified, according to current psychology, under the heads of intellectual, emotional, and volitional tendencies. In spite of the tremendous enrichment of the modern school curriculum with the subject matter that calls for the free and spontaneous and constructive activities of children, it still remains true that teaching is a learned profession. As such it requires a reasonably high order of scholarship. Hence a natural endowment that includes intellectual abilities and tendencies to intellectual

[1] It is very important to note this difference between enthusiasm and effervescence. Some of the most genuinely enthusiastic teachers make very little emotional display of their interest. It is a quiet, pervasive, penetrating, and steady quality making itself felt as a sort of moral earnestness and good feeling.

interests is essential to the personality of the teacher. Teaching requires also the willingness to assume responsibility for the direction of a complex set of activities and the management and control of a large group of pupils. In this respect it calls for more executive ability than clerking or stenography. Hence the personality of the teacher must include more than the average endowment in the way of volitional qualities. As idealism and the power to enter readily into sympathetic relations with others are both called for in the profession of teaching, there must be an original endowment of the emotional nature of a higher order than is necessary in the work of the ordinary trades.

The social qualities.

Teaching is essentially a social process. The teacher is placed in a situation of double social reference — one set of relationships involving the direction of the activities of pupils, the other necessitating the ability to work readily with other representatives of society in the school system. It is evident, then, that the personality of the teacher must include a special group of qualities that are essential to effective social influence and cooperation. President McKenny,[1] of the State Teachers College, Ypsilanti, Michigan, has admirably analyzed out the fundamental qualities in the personality of the

[1] "The Personality of the Teacher," Row, Peterson, & Co., 1910.

teacher as follows: sympathy, sincerity, justice, dynamic knowledge, good breeding, idealism. All of these qualities, unless it is dynamic knowledge, may be classified as social; and all of them are improvable with cultivation. But, whether natural or in part acquired, the significant thing about them is that they are elements in that subtle complex which we call personality, influencing others by suggestion rather than by precept. Hence, it may be worth while to dwell for a moment on these qualities in their bearing on the vocation of the teacher. Through sympathy the teacher enters into a feeling relationship with his pupils that binds him and them into one intimate social whole of mutual good understanding and right attitude. Sympathy creates a social situation favorable to the social contagion of all that is best in the mind and life of the teacher. Where sincerity is apparent pupils have no reason to suspect or to doubt the teacher. Sincerity implies moral integrity and singleness of motive. Between the pupils and their teacher no dark veil hangs to obscure the passage of light in either direction. There is nothing that needs to be concealed. The teacher whose personality reflects sincerity of life and of thought and of scholarship does not need to put up a "big front" to impress his pupils. He can let his own knowledge and the truth upon which it rests have free course. Justice implies fair dealing, the

willingness and the purpose to take account of all the facts before passing judgment on any pupil, whether it be a matter of blame or of praise. Pupils are very quick to respond to the ideal of justice. Patterson Du Bois[1] considers the sense of justice one of the earliest and strongest in the development of the child. Whether he is right or wrong, it is certain that the possession of this sense on the part of the teacher meets with a ready response which indicates its importance as an element of personality. By dynamic knowledge is meant knowledge in a form that can be used readily to meet the needs of specific situations. It is knowledge so thoroughly under the control of the teacher that he can do what he pleases with it in the various emergencies that arise calling for its use. It is not merely a mass of facts stored away, but these facts are organized and related to life. They are so thoroughly assimilated and made one's own that they have become a part of the teacher's fluid capital. Good breeding prompts the teacher to respect the sensibilities and the rights of pupils just the same as he would those of adults in all matters of social relationships. His special official relationship to the class does not imply any absolution from the requirements of polite society. What is true of his relationship to the class in this respect applies also to his relationship to the patrons

[1] "The Culture of Justice."

of the school. Even if they sometimes present themselves under conditions of anger, of ignorance, or of ill will, nevertheless they are more likely to be favorably influenced by the teacher in whose personality good breeding is not only a principle but also an ingrained reality of the heart. Whatever may be true of the necessity of hard-headed practicality in the pursuit of certain lines of business, the work of the teacher is one that calls for a large development of idealism. The teacher is dealing with growing, developing, plastic individuals. From the point of view of his profession, as he looks over the children of his schoolroom, he must believe that to education "all things are possible." This does not mean that he will ignore individual differences, but that he will never give up hope of some worth-while achievement on the part of every pupil. There is no child short of the feeble-minded whose life may not be transformed by his earnest and persistent effort or that of the combined teaching force. The pervasive influence of the teacher's idealism should reach to every nook and corner of the schoolroom. Soon enough children will learn of the evil of the world. Let the school protect them from it for a season until they gather strength. The school should reflect the social environment, but not entirely. It always will and must have something of artificiality about it, the artificiality of selection of the finest

and best that can be brought to bear upon the lives of children. Teaching is an idealistic profession, and we should expect and demand an element of idealism in the personality of the teacher.

The problem of growth and development of personality.

The problem in the light of heredity. — We have seen that personality is a very complex thing. It is not something that depends on a single trait. The number of elements that enter into its composition is very great. The number of possible combinations of these elements makes infinite variety of personality possible, with the strangest mixtures of good and bad in all of us. Is it possible to do anything in the way of strengthening the good points and eliminating, or modifying, the bad? If so, then there is such a thing as intentional improvement of personality. Heredity gives certain elements. Are these fixed and final in their nature and degree? Is their organization into a personality predetermined? While we know comparatively little as yet about heredity, there are a few things relevant to our queries that stand out rather clearly. One of these is to the effect that our heredity is very complex. *On the average*, we inherit one-half of our natural characteristics equally from our two parents, one-fourth from our four grandparents, and the remaining one-fourth from a long line of more remote ances-

tors.[1] Now, if we take just the first six of our ancestors into account, we can see what radical differences are represented in our possible heredity in respect to physical qualities, temperament, mental capacities and tendencies, and social and ethical dispositions. Another thing that we know about heredity as the result of recent studies in eugenics is that we do not inherit the varying qualities of our ancestors on the principle of an even mixture or blend, but rather it is what the biologists call unit characters that are passed on from one generation to another. This principle of heredity is most definitely established in the case of certain physical characteristics, such as the tendency to have six toes, the tendency to certain colors of the hair and eyes,[2] to certain prominences of features, etc. There is some reason to think that the principle of inheritance of unit characters is applicable also to well-defined mental traits, such as aptitude for mathematics, music, etc. Now, on the basis of inheritance of unit characters, it is easy to see that from the most immediate six of our ancestors we

[1] This does not mean that for the inheritance of any particular person it would be true to say that it is expressed by the formula one-fourth from father plus one-fourth from mother plus one-sixteenth from each of four grandparents, and so on. But in the average of thousands of persons the law of heredity would follow this principle of distribution.

[2] The laws of variation of color are too complicated to state here. The student who wishes to go further into detail should read up on the applications of Mendel's law.

might inherit an array of unit characters involving many conflicting and more or less unrelated elements. From one ancestor might come a tendency to a fiery temper, from another a certain mildness of disposition, from another aggressive and dominating qualities, and from still another an element of shyness. True, there would be a tendency for some of these to be more dominant than others. Yet those characters that were masked by the more dominant ones would still be present, and they might determine behavior at times. If this conception will hold, then our personality at the outset might be a very complex set of characteristics related to one another in an unstable equilibrium. The child would not be so much a personality as the raw material of one, the definite form of which would be determined by the final organization of a very complex set of variables, an organization and balance of qualities and tendencies which might take any one of several possible forms. From this point of view, personality is not so much a given mystical somewhat as it is a definite achievement of experience on the basis of certain elements given by heredity. Now, what is the bearing of all this on the growth and development of the personality of the teacher? Man, as we know, retains plasticity for a long period of time, just how long we cannot tell. Certainly there is much plasticity in the earlier years of one's active professional career.

This means that the final equilibrium of hereditary qualities that go to make up character and personality is not yet determined. Hence the possibility of further development of personality. If this is true, no teacher ought to despair of modifying his personality to some extent, if he can become conscious of the principles of its growth and development and is willing to apply them.

Principles of growth of personality. — President McKenny has well stated the fundamental principles underlying the growth of personality, in the book previously cited. His summary of the processes involved is as follows: (1) the desire for self-improvement, (2) self-examination, (3) focusing upon ideals, (4) selection of a favorable environment, especially human associations, good books, and participation in community life. A strong desire for self-improvement is an impelling force in life. That must be the explanation of such lives as those of Benjamin Franklin and Abraham Lincoln, men who had so little of the ordinary opportunities of education, yet who reached eminence in matters literary and intellectual. Practice teachers in normal schools have been known who were denied the privilege of graduation because of serious defects, who nevertheless secured humble positions and persisted in the attempt to improve until they finally achieved success and were recalled to the normal

school and given their diplomas. It is not likely, however, that there will be much desire for self-improvement until there is some quite definite consciousness of defect. This is where self-criticism plays its part. It is a means which any serious-minded person can employ to discover his own imperfections and thus take the first step necessary to further growth. Improvement must be in some specific direction, it can hardly be improvement in general. Criticism discovers the direction in which improvement is desirable. Yet growth does not necessarily follow from criticism. The more faults one finds in himself, the more discouraged he may become. In fact, that is the natural effect of criticism. Introspection often makes one morbid. We know also that when the critical attitude is exercised in the course of one's activity it tends to distraction and interferes with the success of the activity. One cannot be vividly conscious of the movements of his fingers and run the typewriter successfully. The woman who becomes conscious of the movements of her fingers in crocheting is likely to be retarded in her activity. And certainly the teacher who is thinking of possible mistakes that he may make while conducting a recitation is sure to become self-conscious and fail to do his best. That is the chief reason why teachers do so poorly when under the observation of a supervisor, particularly one who is known to be severe in his criticism. The

teacher who would grow must subject himself to the criticism of himself or of another. But growth will not come through criticism alone. Real growth comes through focusing attention upon the ideal that is projected over against the background of the defect that is discovered. Let the mind become sensitized to the good by dwelling upon the ideal until it burns and glows in the soul. Go into the class forgetting the past and carrying this new glow of the soul, and behavior is likely to follow to some extent in the line of the improvement desired. Not during the conduct of the lesson is the time for self-criticism, but afterwards; then must come a new focusing upon the ideal, a new consecration to the better self, a new sensitizing of the soul for a richer and fuller response to the ideal in the next lesson. Thus it is that growth takes place little by little. The fourth principle, the selection of a favorable environment, is significant largely from the fact that the right influences of life help us to discover and to focus attention upon the right ideals. Of these influences the companionship of the right people and the right books are partly under our control. Participation in the better activities of community life widens the opportunity to put our ideals into practice.

It is my contention that within certain limits set by heredity there is no aspect of personality — physical, temperamental, mental, or social — that may not be

modified to some extent. This modification may take place through a change in some particular element or through the combining of several elements in some new way. This may not appear to be true in the case of such physical elements as height and size. But even if we cannot "by taking thought add one cubit unto our stature," yet we may make the most of what height and size we have by the improvement of our bearing and by the display of reasonable taste in dress. In the matter of physical energy, the habits of exercise, rest, recreation, and diet may make a vast difference to the nerve force with which impressions on the consciousness of others are made. In the use of the voice, personality may be very greatly improved by the cultivation of the lower, firmer, tenser qualities and through the elimination of qualities of querulousness, hesitation, uncertainty, and doubt. The temperament with which one is born cannot be eliminated, but it can be greatly modified. The nervous and impulsive can learn larger self-control; the oversanguine can determine to be more careful and practical in judgment if they will. Every temperament can be refined of some of its dross and be balanced up with the cultivation of the desirable traits of other temperaments. All education is witness to the improvement that can be made upon natural mental and social qualities. Personality as the combined effect of the inherent

qualities and characteristics of the individual functioning in social and ethical situations is not a mystical somewhat that is given outright at the beginning and which we have to take as we find it. It is a complex of definable elements, and in its final form is the result of growth and development. It represents a harmonization of a lot of characteristics into one working whole. It is an achievement partly under our own control. It is important for the teacher to remember that improvement even in personality is possible if we will but go through the processes on which such improvement depends.

Vocational Guidance of Teachers

The principles of vocational guidance are nowhere adequately established. They are clearer for some occupations than for others. Teaching offers such a wide range of possibilities that it is exceedingly difficult to lay down any principles of guidance for those who are thinking of it as a possible career. On the side of personality about all that we can say is what has already been said to the effect that there must be those natural qualities of body, temperament, and mental and social abilities that make the individual effective in social and intellectual situations. We cannot tell with precision just what combination of qualities will insure success. All we can do is to warn those who

represent certain extremes that they should not think of entering upon this profession. Teaching requires a certain alertness, self-control, physical and nervous vigor, ready sympathy with child life, intellectual interests, and social and executive inclination that makes it unwise for any of the extreme types of sanguine, phlegmatic, choleric, melancholic, or nervous temperaments to undertake this kind of work. Physical defects attract attention to themselves and make it more difficult for the other qualities to count than would be the case in such occupations as bookkeeping, stenography, or any trade in which the social situation is simpler. There is no occupation that puts one under more severe nervous strain than teaching a group of children all day. This strain is accentuated tenfold where there is any weakness of discipline. Hence nobody who is high strung or nervous, or whose physical vitality is low, should enter upon the profession of teaching. Such teachers are bound to break down sooner or later. The rewards of teaching are too meager, whether measured in terms of money or of appreciation, to justify any one in the choice of the vocation who does not find in it some special satisfaction of intellectual or idealistic interests or some secret joy in living in the companionship of children and young people. In many respects it is made too easy, or else it is a matter of too little thought, for young

people to get into our schools for the training of teachers. High school principals could render a distinct service to their graduates as well as to society by giving wise vocational counsel regarding the profession of teaching and the qualities necessary to the achievement of the highest success in it.

Supervision of Teachers

Normal schools and colleges make only a beginning in the training of teachers. This is not their fault necessarily; it is inherent in the conditions under which the best of them work. Many principals and superintendents do not seem to realize the fact that the graduate of the professional school is not a finished product. The first year of actual teaching is the most important year in the training of the teacher. It is in this year that the young teacher first faces the larger responsibilities of the profession. The principal or supervisor has it in his power to make or to break the young teacher. He should remember that these teachers have been given only enough training to start with, they have made only a small beginning in their growth and development. Moreover, they are almost always young and immature. They have a right to sympathetic guidance and direction in the first two or three years of their teaching experience. Doubtless it is easier on the principal to hire teachers who have

been tested in some other school system; for he can then sit in his office with a greater confidence that everything is going on all right, particularly in matters of discipline. But, on the whole, that principal will have the best school who takes promising young people directly from the normal school and the college and assists in training them himself for his school during their plastic years. He is more likely to come into close and sympathetic relations with his teaching corps and to secure loyal and lasting coöperation from them. Besides, he will be compelled to get away from the routine and clerical duties of his office more frequently, and he is more likely to develop into the professional leader of his teaching staff. This will be a great gain for him as well as for his school.

Supervision should not be the dictation of the work of teachers any more than teaching should be the dictation of the work of pupils. That supervision is best which makes the most complete use of the intelligence, experience, and professional training of the entire body of teachers. The enthusiasm and professional spirit of the teachers will be at its highest level where there is intelligent coöperation for common ends known and appreciated by all. It is a terrible and appalling waste of the best resources of the school system not to utilize the insight, practical knowledge, and intelligence of those who are closest to the actual

problems of teaching. Again, it is just as great a loss of economy to hire a superintendent or principal who is incapable of focusing the intelligence of the teaching body upon their problems more effectively through his superior knowledge of the larger problems of the school and his wider outlook upon the educational field.

Professional Growth of the Teacher

We are living in a period of rapid change in educational ideals, methods, and practices. Changes in curriculum and in the organization of the school activities are occurring continually. Children are handled in more specialized groups calling for different materials and modes of instruction. No teacher can be trained for the needs of the vocation once for all; he has to continue his training, to make conscious effort to grow and to keep up with the times. Professional reading and study is an absolute essential to continued success in our profession as it is in medicine. School authorities should realize this fact and make adequate provision for the further training of their teachers. This provision should not be one which merely requires further study, but rather one which organizes the work of the school system in such a way as to provide time and facilities for it. The tendency on the part of teachers to attend summer schools in ever larger numbers is indicative of their own desire for

self-improvement and of their intelligent conception of the growing responsibilities of their calling. But it ought not to be necessary for them to sacrifice their vacations repeatedly to find the facilities of growth. There ought to be freer and more flexible facilities for them to do this work at intervals of specially arranged leaves of absence during the school year, or through classes provided for them inside the school system. Sometimes it is better for the school to have the teacher come back in the fall with vital energy renewed than with a string of professional courses to his credit. But, from time to time, the teacher needs these professional courses for the renewal of enthusiasm and the energizing of work that has tended to become of the mechanical and routine type. In this connection, I have often thought that there is too general a tendency on the part of teachers coming to summer schools to raise the question as to what is most immediately practical for the next year's work. There are times when it is life itself that needs to be refreshed. The teacher may keep his nose too close to the educational grindstone. Occasionally it would be well for him to think of himself not as a teacher but as a human being who has intellectual and emotional interests to satisfy at the centers of learning. Why not take some courses just because you want them, without asking the question what you will do with them? If you want to

know more about the stars just to satisfy your curiosity, take a course in astronomy and enjoy it; if you want to know more about poetry because you enjoy it, take a course in the poets even if you are teaching mathematics. You are a human being first. Everything that will satisfy your legitimate human needs will make you a better teacher. You teach with the whole self as well as with subject matter. Enrichment of the self vitalizes all that you do. The widening of the outlook may give a truer perspective of your own work and you may see its significance more clearly. Intelligence has numerous ways of making itself felt besides those which are inherent in the elements of the particular body of subject matter which you teach and the particular methods which are adapted to that body of subject matter.

The Scientific Aspect of Education

Water has been running down the hills through all the ages, exerting its transforming power; heat, light, and electricity have performed their wonders from the beginning of time. The modern era does not differ from the ancient by virtue of the larger number of forces of nature that exist but by virtue of the fact that it has brought the forces of nature under control. Science has discovered the laws of their operation and has applied these laws to the more efficient utilization of

natural forces in the interest of man. Progress has come not from violation of any natural laws but from their guidance and direction into more fruitful channels.

Educational progress, in like manner, works with nature, not against it. We want human nature to produce its finest and best results, and we do not want to leave it to chance that these results shall be produced. In order to work with nature to best advantage we must have exact knowledge of child needs, of the processes by which they are normally met, and of the measure of our success in meeting them. It is from this point of view that large meaning, significance, and promise attaches to the development of experimental pedagogy and to the perfection of educational tests, scales, and standards. This scientific movement aims to make sure of all facts concerned with our problem by utilizing the methods of experiment and of statistics common to other scientific procedures. Diagnosis of the teaching situation is made more searching, exact, and scientific. Methods of instruction are tested by experimentation under controlled conditions. By the Binet tests and others, we find out more precisely the natural endowment of intelligence with which we have to deal. Pedagogical tests, such as the Courtis tests in arithmetic, determine what is the present stage of achievement. Scientific scales, such as the Thorndike handwriting scale and the Thorndike-

Hillegas composition scales, measure the amount of improvement made in a given function and make it possible to compare this improvement with that of others. The diagnostic value of all these things is incomparable, and with the perfection of the tests and their more thorough standardization it is bound to become still more significant. Objective means of diagnosis and of measuring results take the place of subjective and personal means. The processes by which we discover what are the needs of life at any given point, how they can best be met, and whether we are successful in meeting them are less random and uncertain and are becoming more certain and scientific. The whole field of experimental pedagogy and of scientific measurement is a highly specialized one, going beyond the purpose and function of this book; but the whole doctrine of function, or the conception of education as meeting the needs of life, calls for the development and application of the scientific element in education.[1]

[1] Most of the scientific tests, scales, and standards can be obtained from the Bureau of Publications of Teachers College, Columbia University. Probably the best presentation of the Binet tests is that given by Terman in his book entitled "The Measurement of Intelligence." In Starch's "Educational Measurements" will be found an account of most of the current pedagogical tests and scales. Harvard Bulletins in Education, Vol. 5, June, 1917, gives a very complete "Descriptive Bibliography of Measurement in Elementary Subjects."

Summary

The child can learn without a teacher; primitive children did so, and all children do so still in certain matters. The teacher becomes necessary in a complex society. His function is to facilitate the natural learning activities of children, to give them the guidance and direction that will make them wider, more certain, and more efficient. To do this is not so easy as to hear lessons. Special qualifications and training are necessary, just as in the case of the professions of architecture and medicine. The teacher must be trained in the specific subjects to be taught, related subject matter, and the principles and methods that are necessary to give scientific character to the art of teaching. To scholarship and professional theory must be added observation and practice. The personality of the teacher is an important factor in success. But many different types of personality may succeed. Personality is not a mystical, intangible gift of nature. It is a complex of perfectly definite qualities which influence others by suggestion. Though these qualities have a hereditary basis, it is possible to modify and improve them. Improvement comes through strong desire to improve, self-examination and criticism, focusing attention on ideals, and choice of favorable environmental influences. Prospective teachers ought to receive vocational counsel to determine whether they have the qualities of personality and the interest in scholarship necessary to succeed in meeting the professional demands of to-day. And teachers in service must plan to maintain the ideals and practices essential to continued professional growth. Scientific tests and scales are being developed as aids in the diagnosis of teaching situations and for the purpose of measuring efficiency of instruction.

Supplementary Readings

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